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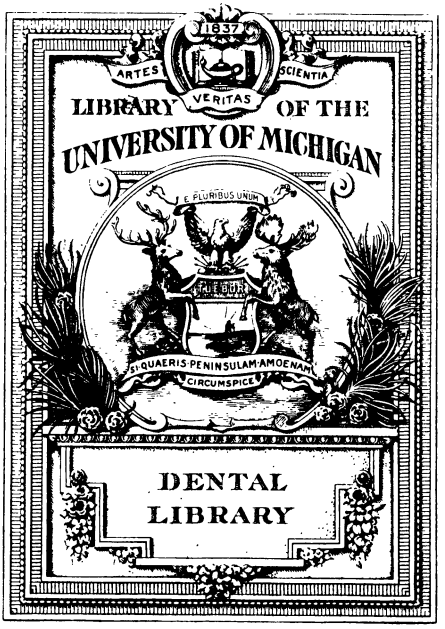
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Progressive Course of Practical Instruction.

Original Contributions

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PROGRESSIVE COURSE OF PRACTICAL INSTRUCTION

THE PORCELAIN ART.

BY HART J. GOSLEE, D. D. S., CHICAGO.

A history of the application of porcelain to dentistry, or of dental ceramics, from its primitive employment in the manufacture of artificial teeth to the present degree of successful attainment in the restoration of the natural ones, is interesting because of the progressive evolution of principles and methods which has made its more general employment successful and practical. It is also interesting because of being more or less replete with sudden outbursts of premature enthusiasm over the possibilities of such work. While this material is, in a great measure, responsible for the development of the higher, artistic phases of modern dentistry, it is only within the past decade, practically, that the true scope of these possibilities has been adequately recognized and fully appreciated.

Profiting by the failures of the past, which, while due largely to this over-zealous enthusiasm, were necessary to the development of the art, and to the bringing about of a material recognition of its possible advantages, porcelain work is now conceded as being destined to occupy a permanent and conspicuous place in the practice of modern dentistry.

Its application to inlay, and to crown and bridgework, and the high degree of esthetic attainment which is possible, has given an impetus to the development which now makes its employment for these purposes as practical as it formerly was, and continues to be, for more limited use in continuous gum work.

The appreciation of this fact has created a constantly increasing demand for such services, and stimulated the progressive practitioners with a desire to acquire the necessary knowledge and skill incident to successful manipulation.

In the presentation of a course of progressive instruction in the

various phases of this work which may in a measure satisfy such a desire, and which will appeal particularly to the busy practitioner, an effort will be made to meet the requirements of such in the most *systematic, concise* and *practical* manner possible; and with the special purpose in view of encouraging the doubtful or skeptical, and aiding the inexperienced in the acquirement of a degree of confidence and proficiency, which will enable them to meet with at least a fair proportion of successful achievements from the beginning.

Porcelain work, however, demands a peculiar skill which is not always easy to acquire, and the facility with which such may be cultivated will increase in proportion to our artistic temperament, aptitude and faculty of observing and appreciating minute detail.

In this connection it must be remembered that *skill* in any special line of work, and particularly in the field of art or mechanics, is more often the result of industrious application, than of heredity or birth-right. While natural endowment and aptitude in this class of work will of course materially lighten the burden, the average person must patiently and diligently apply himself in order to become familiar with the characteristics of the materials employed; with the proper method of manipulating them, and with the requirements incident to their successful application.

Hence the inexperienced should expect to encounter failures, but should study the cause, and so profit by this study as to learn how to overcome them, before he can hope to acquire that degree of dexterity and assurance which renders such work fascinating, pleasant or even agreeable.

A simple smattering of knowledge is often worse than none at all, and causes the labor involved in its application to become arduous and uninteresting; and indifference is a positive obstacle to successful execution.

The practicability of this class of work in its various phases is now so generally conceded and its field of usefulness so broad, that no one need hesitate to employ it whenever and wherever it is indicated, but its successful employment demands the most consummate judgment, and the most scrupulous attention to detail in every respect.

A comprehensive elucidation of the indications for its use may be summed up in the composite, and in keeping with the manner in

which this course of instruction is to be given, by emphasizing the fact that porcelain is a mineral substance which is more or less *friable* in nature; and that its inherent strength, integrity, or stability, will in consequence increase in proportion to the amount which may be used, or in proportion with the *bulk*.

This, of course, precludes its employment in those cases where it could not be used in sufficient thickness to possess reasonable integrity, and confines it to that class where the conditions are, or may be made, favorable; which of course constitute the larger proportion of cases.

For this apparent reason *judicious conservatism* is the first essential consideration incident to the application of porcelain work, and, indeed, is the key-note to whatever degree of success may be achieved.

Second in importance is a comprehensive study of each individual case as it presents, in order that the operator may become thoroughly familiar with the requirements, and be thus enabled to use the necessary discretion as to the indications.

The third prerequisite is a careful and conscientious observation of all of the details incident to the execution of the work. This, of course, is an important feature in any class of work, but is more particularly necessary in the use of porcelain than in any other special procedure, because to neglect to observe even the smaller details will invariably result in a degree of failure, as any portion of this work cannot be negligently or carelessly performed if satisfactory results are to be obtained.

The maintenance of *absolute cleanliness* is also imperative, and if carefully observed is conducive to the accomplishment of the most successful results. As contamination with debris of any kind may greatly injure the properties of this material, all portions of the manipulative procedure should be confined to a special place devoted exclusively to this work, and which, together with all of the instruments used, should always be kept neat and clean. While the advantages of such environments also apply to other lines of work, this feature is especially emphasized as being absolutely essential in this particular connection, because of the somewhat demoralizing or restraining influence upon the cultivation of artistic attainments which would usually be induced by the more or less slovenly atmosphere which surrounds the average dental laboratory.

attainments which would be induced by the somewhat slovenly atmosphere of the average dental laboratory.

This brief introductory to the course is thus indulged for the purpose of impressing upon the minds of those who may be interested the fact that a cursory knowledge of the requirements, and a limited familiarity with the detail in this work, will prove to be of but little value in its successful employment.

With an appreciation of these requirements, the possession of a moderate degree of intelligence, of a desire to learn, and of a willingness to apply himself, and with a suitable equipment of facilities, any progressive practitioner should be able to so master the intricacies of the work as to meet with success in its application.

A brief resume of the modern facilities for employing porcelain and including furnaces and "bodies" will be the next subject considered, after which will follow in serial order the various procedures incident to the practical application of this work in all of its phases.

(To Be Continued.)

PROSTHETIC DENTISTRY.

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CHAPTER I.

The ancient Spartan king, Agesilaus, when asked what things boys should learn, replied: "Those things which they will *practice* when they become men." This remark expresses a truth which is as forceful today as at any time of the world's history; in fact, in these days when labor-saving devices and time-saving ideas shape the destines of individuals, the practical becomes a most potent factor. This is an age of the practical, and the trend of the times is towards the servicable and comfortable. Theory and speculation are necessary attributes to progress, but the basic element always remains centered in the practical.

Prosthetic dentistry, like any of the other arts or sciences which has as a sub-structure—mechanics—advances in theory only, when that theory bears successful results in practice. In its two-fold evolution it absorbs from every available source which tends to broaden its art or perfect its science; in consequence of which, it calls to its aid: anatomy, chemistry, therapeutics, surgery, physiology, pathology, bacteriology, mechanics and sculpture. The prosthetic has evolved from the mere mechanical to a plane where it stands the equal of any of the other grand divisions or specialties of dentistry.

In order that we may more clearly comprehend the true scope of dental, oral and facial prosthesis, let us determine the exact significance of the term Dental Prosthesis, since it will aid us in understanding its limitations and purpose No doubt we all agree when we analyze the word Dental, and say it is the simple adjective form of the Latin noun "dens," a tooth; the second word, Prosthesis, is the Greek term which signifies: addition, replacement, affixation, substitution or restoration. This quintette of words completely embraces the numberless operations assigned to the province of the prosthesist.

The antonym of prosthetic dentistry is aphaeretic dentistry. Aphaeretis, also a Greek word meaning: to take from, omit, remove,

or extract; hence the prosthetic operations stand for *addition,* while *aphaeretic* operations imply *substraction.*

Our labors in the former demand that nature is to be copied, and that dental preservation is its real function, and the aphaeretic work or dental annihilation more properly belongs to the department of oral surgery. Some of the teachers of prosthetic dentistry contend that the subject of dental extractions should be included in the lectures on prosthesis, but in conformity with the foregoing definitions, distinctions are made which impel the conclusion that the purely surgical should not be incorporated in the prosthetic, notwithstanding the fact that the prosthesist is supposed to be familiar with dental surgery, and frequently called upon to resort to surgical work. Prosthetic dentistry is so interwoven with the entire dental curriculum that if the full latitude of the term were enforced it would not only include the surgical, but the co-related subjects already spoken of in the proem of this chapter. We will, therefore, restrict this theme as implying primarily: Dental Restoration.

A comprehensive definition of this department work would be as follows: Oral Prosthesis is that specialty of dentistry which relates to the restoration of the oral cavity, whether the missing parts be osseous or vascular. It teaches the variety of methods employed in replacing lost dental organs or any part thereof, and describes the materials and devices entering into the artificial substitutions; details the basic temperaments; defines the functions of the organs of mastication and describes the philosophy and architecture of the lower third of the face.

Before entering into a detailed description of any of the special methods of construction, or application of dentures, crowns, bridges, obturators and the various agencies of dental restoration and substitution, it will be well to devote some little consideration to such terminology as will be essential to a full comprehension of the subject. The profession is still considerably hampered in all of its departments because of the lack of uniformity of its terminology, and this retards the rapid progress in all practical work. When the choice of words clearly crystallizes itself into a nomenclature we shall have a channel through which we may dispatch ideas, without fear of misconception. We can not expect marked advancement in practice until we have a true medium of mental exchange,

since the mind must first grasp the thought ere the hands can perform the work.

In all the subsequent chapters on this theme, earnest effort will be made to incorporate a clear definition of the technical terms employed, thus insuring that the purpose of the article be effective, though great care will be exacted that the character of the writing be in aid to those seeking a clear scope of the fundamentals of prosthesis. The aim being to make the descriptions thoroughly academic, avoiding in every instance the presentation of theories which can not be executed in actual practice.

To facilitate instruction in this department, diagrams will be employed as they assist in simplifying the explanations, and aid the mind in retaining outlines and devices. The importance of illustrations can not be overestimated if it be true, as psychologists say, that fully eighty per cent of human intelligence is obtained through the optic nerve.

TREATMENT OF THE ORAL CAVITY PREPARATORY TO INSERTING ARTIFICIAL DENTURES.

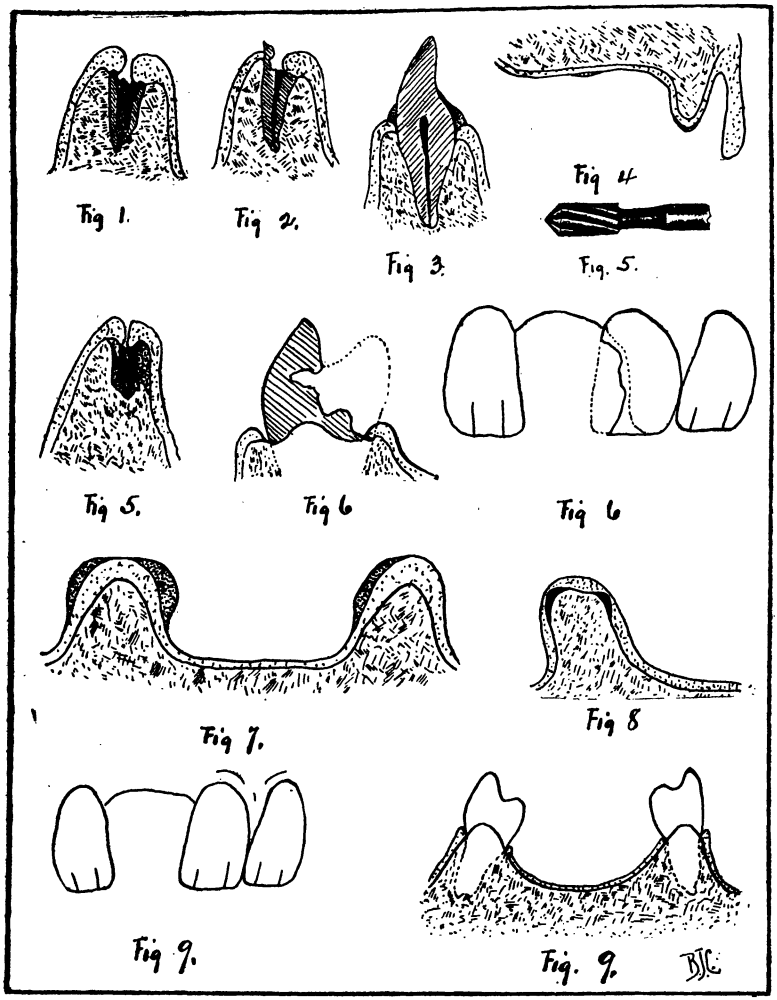
Many of the pronounced failures in prosthetics can be directly traced to hasty decision or hurried construction. Learn to deliberate. The old saying, "The more haste the less speed," is in a sense quite applicable to the toils of the dentist. It is an acknowledged fact that dentists proceed to take an impression before having given the mouth the requisite treatment promissory of perfect adaptation of artificial dentures, both partial or full cases. No special regard is paid to the abnormalties, irregularities, say nothing of the varied pathological conditions manifesting themselves in either the superior or inferior maxilla.

Briefly noted, there are a score of conditions which must be understood if we are in quest of success.

1st. Extract useless teeth. Often the jaws present two or more teeth which are in so diseased a condition as to contra-indicate any attempt at preservation. They may be affected with a chronic case of phyorrhea alveolaris, and are too loose to be of service. Or they may be suffering from so severe a case of alveolar abscess as to preclude the possibility of curing the tooth. If they are so badly decayed and present walls too frail to admit of restoration by any of the numerable systems of partial or full crowns, it is best not to

count much on the endurance of such teeth. Best extract same and make a serviceable and comfortable denture. (Fig. 1.)

2nd. Remove all loose or fractional roots, as their distressing



presence invites unhealthy surroundings and is likely to threaten the usefulness of the detnrue. (Fig. 2.)

3rd. Should the case be such as to present a number of healthy teeth on either the dexter (right) or sinister (left) side of the

mouth, and their cervical (neck) portion surrounded by salivary calculus, be certain to remove these deposits. The calcic formation which so frequently collects at the cervical portion of the teeth and under the free margin of the gums is a source of offensive breath and induces distinctive diseases to both teeth and alveoli.

Further, if an impression be taken prior to the removal of this earthy debris, and a partial denture constructed, the tartar readily wears away, leaving an opening for food and oral fluids to enter. Again, should the patient later determine to have the teeth cleaned the elimination of this calcic circumference about the teeth would cause a corresponding space between the natural teeth and the artificial base-plate—necessitating the production of a new substitute. (Fig. 3.)

4th. It not infrequently happens that the mucous membrane evidences a tender or even hyper-sensitiveness; or is affected in a manner requiring medication to relieve inflamed surfaces. There may be syphilitic ulcers or a disposition akin to cancers, and in this event the impression should be deferred until, by the aid of either local or general treatment, the disturbances are allayed. This treatment may be prescribed by either the dentist or family physician. If of a serious or congenital nature the counsel and aid of a physician should be observed. The dentist must not pretend to be a general practitioner of medicine if he hopes to win the respect and confidence of the public and the esteem of the medical fraternity. There should be the most cordial relation between physicians and dentists, and if more frequent "consultations" were instituted in cases requiring the service of both professions, the two callings would be more exalted. (Fig. 4.)

5th. If the oral cavity presents necrosed bone in any of its divisions it is essential that this dead or dying tissue be removed. There is greater likelihood of failure from this supposed simple cause than is generally suspected. Besides, the prevalence of this most distressing ailment is far greater than the populace or practitioners imagine. Oral surgeons are observing that the careless, and often reckless, extraction of teeth induces a necrosed condition, threatening the entire alveolar process and adjacent bony structure. Carefully and thoroughly remove this foreign substance and assist in restoring the parts to a healthy condition. After cutting away the disturbing spicula, and cleansing the wound with medicaments

intended to induce healthy tissues, refrain from taking the impression until the wound has about disappeared. Should the patient's health or vocation require immediate dental substitution, see to it that no undue pressure exists on the wound. (Fig. 5.)

6th. The decayed remaining teeth must not escape notice, before inserting a denture, since if the patient later should demand that these teeth be restored, it might mean the production of a new denture. Instance of which is often seen in cases where an artificial central is required and the natural and remaining central has on its mesial surface a large cavity. If the artificial tooth, which is inserted, is not positioned, admitting of proper contour of the subsequent gold filling, the results of both denture and filling are abortive. It should be the practice—if at all possible—to do all the operative work prior to taking the impression for partial denture. This is equally true relative to crown work, which invariably should precede that of denture construction. (Fig. 6.)

7th. The alveolar ridge is sometimes covered with annoying soft tissue. This is especially the case where the teeth have been extracted years ago, and the patient has worn the first denture too long or the artificial substitute may have been an ill-fit. In that event, in a patient of a lymphatic temperament, there will develop a soft and spongy gum. The gum often being so flabby as to preclude the possibility of effecting a perfect fit. In these cases, when the alveolar ridge is so completely absorbed and the soft tissues so abundant, it is advisable to give the patient an anæsthetic, trimming or chipping the appending or flabby gum. Then after the case has made good healing progress the impression can be taken and the denture will be satisfactory. (Fig. 7.)

8th. The alveolar ridge may be extremely unsymmetrical or present loose or fractured septa, hindering perfect healing. In such cases the nipper-forceps and large surgical burr should be employed and the alveolar ridge so carved or sculptured as to insure ready adaptation of the base-plate. The alveolar ridge should receive greater surgical attention—the symmetry of the ridge as well as the comfort of the patient demands that the prosthesist should assist in shaping the bony and muscular tissue. This may be best accomplished at the time of extraction—though it can be properly effected subsequent to that operation. (Fig. 8.)

9th. People often present cases where there are but two or three sound teeth remaining, but these have assumed, through abnormal mastication, so irregular a position as to defy the genius of the prosthesist, in his attempt to position an artificial denture, rendering aesthetic effects. Besides these natural teeth may be tipped in a manner forbidding the insertion of a base plate. In so irrigular a case, if the age of the patient indicates, the remaining teeth should be properly positioned and then the impression can be taken; the artificial teeth will then act as a splint in holding the natural teeth in their new positions. (Fig. 9.)

10th. Never take an impression of a full or partial case without giving the patient a clear idea of the character of the substitute; this latter prerequisite will forestall a variety of misunderstandings and will educate your patrons in the art of dental requirements. If you hope to contribute dignity and standing to the profession of dentistry you must serve in the dual capacity of advisor and educator, for advice without elucidation is like superstructure without foundation.

(To be continued.)

DENTAL THERAPEUTICS.

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CHAPTER I.

In presenting this series of papers it will be our object to talk upon and discuss the various agents for the treatment of many pathological lesions that come under the care of the dentist, leaving out such means as would naturally come under the head of filling material and their uses. Such as the restoration of lost parts the pathology and treatment of such lesions as may properly belong to the dentist require the most proficient knowledge of the action of drugs, both as regards their general and local action. While it must be borne in mind that anything like a complete discussion of such subject as pharmacology would be quite impossible, still it must be remembered that the term pharmacology is the study of the action of drugs when used in small quantities in living tissue. When it is considered that most all disease processes are the result of some external irritant, pharmacology must necessarily be looked upon as a biological science. When an agent is applied to a diseased part for the purpose of reinforcing the tissues in their effort to maintain their physiological functon it is then called therapeutics.

One of the important points to be considered is that of applying the remedy. It must be clear to every one that a drug acting as an irritant to the skin would necessarily act differently when taken into the stomach and intestines. It must be borne in mind that certain tissues and organs can absorb certain agents with greater ease and rapidity than other tissues and organs. So, that if an agent is absorbed slowly and can be rapidly eliminated a much greater quantity would pass through without producing any toxic effect. In the local action of drugs when applied to the skin or mucous membrane of alimentary and respiratory tract can be applied in several different ways, solutions or powders. In the lateral form it is absorbed very much slower and is used as lozenges; thus being allowed to dissolve slowly they are allowed to remain in constant contact much longer with the part to be acted upon; such is not the case when the drug

is swallowed. Solution can be applied to the eye, but if used in the form of an ointment the effect can be retained very much longer.

The application of drugs locally on the skin is usually accomplished in the form of an ointment or plaster. Sometimes it is found necessary to hold these agents to the surface of the skin by bandaging or adhesive plasters, both of which can be used to retain the substance to the part for almost an indefinite period, but different means have to be pursued in their application to the mouth, respiratory and alimentary tract.

When it is desired to obtain the general action of a drug it is usually accomplished by the administration by way of the mouth; they may be given in the form of a water solution, alcohol, oils, or some other indifferent body. Various means have been devised for the administration of drugs having a disagreeable taste. Many remedies are put up in the different forms known as pills and capsules. The disagreeable taste of some remedies may be concealed by the addition of sugar in some form or other, also by the addition of some strongly tasting substance like the volatile oils.

It must be remembered, however, that all the above named means of disguising the taste of the medicine must necessarily influence the rapidity with which these drugs act. The rate of absorption in the alimentary canal is influenced to a very large extent by the methods of administration and the form in which they are administered. Of course, it will be borne in mind that the rate of absorption differs considerable with different drugs, but, as a rule, however, remedies that are taken in the form of a solution are usually absorbed more rapidly, while those inert bodies that may be incorporated in the drug to disguise its taste usually retard the absorption; for instance, common salt, sodium chloride, enters the blood more quickly when in solution than when in a dry crystalline state; also morphine is absorbed much more easily than if taken as opium. It will be remembered that a large majority of drugs absorbed from the stomach and alimentary canal reach the liver before passing into the general circulation; some of these may be retained in the liver which gradually eliminate it. Quite an important method of administering drugs to a part like the lungs is accomplished by inhalation. This method sometimes accomplishes two objects, thus obtaining the general and local effects of the remedy applied.

In the administration of ether and chloroform we have one of the

best examples of the general effects that is brought about with the method of inhalation.

It must be borne in mind, however, that substances absorbed by the lungs are excreted by the lungs. Gases or vapors that pass through the epithelial lining of the alveoli is usually accomplished by what is known as partial pressure, which is due to the contraction of the air on one side of the alveoli and the blood on the other side. When the air contains more chloroform vapor than the blood the vapor passes through the walls of the alveoli, and when the blood becomes charged with the vapor it is then forced back through the wall of the alveoli. So it can be seen that anesthesia is brought about through the blood becoming concentrated sufficiently with chloroform vapors.

Many agents much less volatile than that of chloroform or ether are frequently inhaled into the lungs for their local effects, and it is possible to carry medicinal agents to the lungs by a spray in order that it might reach the deeper part of the respiratory tract.

We might here mention another means of the application of drugs which is of a more modern practice than those we have previously mentioned and are becoming more widely and universally used each year. We have reference to the subcutaneous injection by means of a hypodermic. This method of practice gives the quickest and most ready means of obtaining the full effects of the drug used, but there are two things that make this method somewhat objectionable; that is, the pain that is produced in the introduction of the needle, and the liability of introducing a powerful remedy into the subcutaneous veins. It has been observed that inestimable amount of damage has been done by the use of this instrument in the hands of incompetent persons, and those who are careless in the care and preparation of the instruments and parts in which the injection was to be made. It is a well known fact unless asepsis is practiced the operation may do more harm than the treatment will do good.

The introduction of a remedy by hypodermic methods is mainly for the purpose of bringing the agent directly into the circulation and tissues, and is usually only practiced in the case of emergency. However, this method has been recommended for the introduction of quinine in pernicious malaria, and some preparations of mercury in syphilitic cases. Bacceli claims to have had great success in this method of treatment. Many antiseptic agents have been introduced

by hypodermic means into various organs of the body, especially in the lung cavities and also in tumorous growths in order that their local antiseptic properties may be obtained; but this latter practice is considered too dangerous to become universally established as a treatment in the pathological lesions of man.

All drugs have their peculiar chemical characteristics, many of which are very simple chemical compounds, while others are very highly chemical complex structure. For instance, we take the inorganic bases and acids, the salts of which are very simple chemical substance, or if we take the uncombined metal such as mercury and phosphorus, they are very simple inorganic compounds in themselves, but are able to act upon the tissue when they are permitted to come in direct contact for some time.

These last named agents offer a very large number of compounds which have a very extended therapeutic use. In organic chemistry there are a great number of so-called artificial compounds, the chemistry of which is well known, as, for instance, alcohol, ether, phenols and ketones, all of which have an extended therapeutic use.

The study of pharmacology brings to our notice a substance that comes chiefly from plants which has a strong alkaline reaction, and are frequently looked upon as the vegetable bases. Their chemical elements are chiefly made up of carbon, hydrogen and nitrogen, and most of them as a rule contain oxygen. Chemically, many of them act as ammonia and readily combine with acids without displacing the hydrogen element in the molecule, thus forming a salt which in many respects resembles that of ammonium; thus they are called ALKALOIDS.

The chemistry of the alkaloids is a very complexed chemical formula and I feel that it would be quite unnecessary to go into anything like a complete discussion of the subject at this time.

It might be well to direct the attention of the reader to the fact that in the decomposition of albuminous substances by bacteria, there is formed a substance that resembles from a chemical standpoint the alkaloids of the plant kingdom. They are classed as ptomains. This substance combines with acids forming a salt which in this respect corresponds with certain inorganic and vegetable bases, and have been extensively studied by the toxicologist.

It is well known that many of these chemical substances are of a highly poisonous character, but this does not seem to be the essen-

tial property of ptomains; for there are a large group of these substances which are wholly inert. It must be remembered that ptomains have no part in the discussion of drugs as a pharmaceutical preparation, but as their chemistry is so closely allied to that of the many alkaloids it will be seen later on in the discussion of this subject that ptomains may play an important part in the disease processes, which we will explain in the discussion on ptomain poisoning.

When it is understood that a number of drugs produce their effects in the tissues and cells of the body through their physical properties while others act upon the tissues and cells through a certain chemical affinity, why not then ptomains have that same affinity both chemically and physically for certain structures of the human body.

We have previously mentioned that disease processes are usually caused from some substance foreign to the body tissues. We have also stated that the knowledge of the physiological functions of the body must be understood, and the deviations from the normal to the abnormal is quite necessary in order that we might select a drug capable of assisting the cells and tissues of the body to overcome the abnormal functions that the tissues have assumed while being acted upon by some foreign irritative substance. For instance, if the pulp of the tooth becomes irritated by the near approach of bacteria or their products it is quite necessary that we determine the extent and the duration of this irritating substance before a remedy can be wisely selected for the treatment of this pulp. If the cells and tissues of the pulp have been but slightly acted upon by this alkaloidal substance that has been produced in the dentine by bacteria that are present, it would be considered only necessary to remove the bacteria either by mechanical or chemical means and apply a remedy that would help to restore the physiological activities of that pulp; and then exclude as far as possible the return of these bacteria from the dentine.

We have previously said that a small number of drugs act upon the cells and tissues only in a physical way, thus it will be seen that where there is only a slight irritation of the pulp all that might be necessary would be to simply remove the irritating agent and promote restoration of the physiological function of the pulp by protecting it from the irritating agents by some inert body; for it can be

readily seen that if we remove the irritating agents such as bacteria and apply some substance that would be equally as irritating, we could not hope to promote the restoration of that pulp to a healthy condition. The question will doubtless be asked: What is understood by the physical action of drugs? In brief we might say, it is to protect the parts from irritating agents and to prevent the evaporation of the fluids in the tissues as, for instance, in the case of burns or abrasions an inert oil is applied to protect the part from any irritating substance, and to prevent the evaporation of certain fluids until nature can again restore the part to a healthy condition.

We have previously said that a large majority of drugs act upon the tissues by chemically combining with certain substance, entering into a chemical combination with certain elements that are present in the protoplasma of the cell. Such a combination would necessarily change the function of the cells. It must be understood here that the chemical elements of different cells must necessarily differ in their chemical structure, for we have no other means of explaining the difference in the action of certain drugs. It is a well known fact that morphine acts upon a different set of nerve cells as to that of strychnine.

When a certain drug is administered and it increases the activities of an organ it is called a stimulant, while on the other hand if it decreases the action it is called a depressant. In the ordinary use of the words stimulation and irritation are looked upon as meaning the same thing, but this is not always true. The word stimulation in strictest sense and as it is used in expressing certain meanings in therapeutics means the increasing the activities of certain specializezd cells. Irritation on the other hand may be applied to the changes that take place in any cell or cells, and most commonly used to indicate the interference with the growth and nutrition of the tissues. As for instance in the case of administration of a drug that would increase the flow of saliva we would call that a stimulant, because it acts upon certain of the higher forms of cell structure in the body like the nerve cells, increasing their activity in a way that it would produce the flow of saliva. It will be seen though, however, that this drug has not only selected a certain kind of cells but has selected those that preside over certain organs. Different drugs that are called stimulants have their special affinity for acting upon certain nerve functions in a way that causes the

increased function of certain organs. It must be borne in mind, however, that if this stimulant is too severe or if it happens to be a mild stimulant and is prolonged for a sufficient length of time it will over-stimulate the cells of the nervous structure which it is acting upon, and eventually the cells will cease to act; and then we have that well known condition, paralysis. So it can be seen from just what has been said that a stimulant may become a depressant, but in order that its depressing effects may be reached it must be prolonged beyond the limit of endurance of the cells in the nerve tissue.

Those agents that are classed as irritants seem to have in a sense a chemical affinity for certain tissue cells of a lower organized structure, such as the epithelial cells or connective tissue cells. If a small quantity of an agent known as an irritant be injected into the subcutaneous tissue it will cause dilatation of the blood vessels, thus increasing the growth of the part until the cells are able to throw off the poisonous products; however, the cells may die because of the continued irritation.

The discussion of this subject up to this point may be considered by some as of no practical importance in the general treatment of disease, but a thorough understanding of what is known as a stimulant, irritant and depressant, will assist the practitioner in selecting a remedy for a given case. For instance if he wanted to preserve the vitality of the pulp he would consider it bad practice to attempt to sterilize the dentine of the tooth by the use of an irritating agent. He would attempt to select as far as possible a remedy that would have a chemical affinity for the nicro-organism, without interfering with the vitality of the pulp. Again in certain diseases of the mucous membrane of the mouth he might want to select a remedy that would act as an antiseptic, destroying as far as possible the vitality of bacteria and at the same time to increase or stimulate the tissue cells in a way that they can recover from the morbid state which they are in. This is what we hope to do in this course on therapeutics. It will be our object to discuss certain diseased conditions, and as nearly as possible select a remedy that can be used in each particular case.

(To be continued.)

OPERATIVE DENTISTRY.

By R. B. Tuller, D.D.S.

Clinical Professor of Operative Dentistry, Chicago College of Dental Surgery.

The purpose to which I shall lend my efforts in a series of reading and correspondence lessons on Operative Dentistry will be to present the readers of the American Dental Journal, not an overflow of my wisdom, nor yet my own personal ideas and theories, but the ideas and theories and the principles and practice of what I believe to be the most practical and up-to-date methods of the most practical and up-to-date authorities along this line of work. As little could be better said, or the ground better covered than has been said and done by some of them, I may take the liberty to quote more or less from their writings. In doing so I shall endeavor always to give credit where credit is due.

I do not launch out into this work with the conceit that I have a special message to deliver, but in a practice of over twenty-five years—twenty-five years of the greatest strides ever made in the development and advancement of dentistry—it would be strange, indeed, if one has been at all observing and philosophical, if he did not accumulate a fund of knowledge and practical experience that would enable him to convey some things of some value to his confreres who, some of them, perchance, have not had the same varied experience and advantages.

There are some men in the profession who know it all. They are sufficient unto themselves, and I do not presume to be helpful to them; but in this reading and correspondence course laid out by this journal I do presume and hope to be helpful to a class of practitioners who may not perhaps be reached so well in any other way. It is not necessary to specially designate them further than to say circumstances in one way and another preclude their participation in those clearing houses of current thought and dental lore, the society meetings and conventions, that keep us abreast with the times. To be sure they have the dental magazines and may obtain text books from the best authors, operators and teachers of the day, but these do not fill the office that a special correspondence

course will be able to do. This is the day and age of correspondence schools; and while some such institutions are mere schemes to get "easy money," many are genuine and are doing a vast amount of good. Many of our practitioners attended college when those institutions were a mere pretense compared with the dental schools of to-day of splendid equipment both in teaching staff and adequate housing and appurtenances, and since their college days have been located distant from any opportunity to "brush up," except by aid of books and dental journals. The importance of the latter cannot be over-estimated, but the reading and correspondence course may prove an important adjunct. It is just an effort to be helpful to whomsoever may choose to sincerely interest themselves with the idea of being benefited.

In my part of the work I shall endeavor to be as concise as possible, consistent, with a clear and complete understanding. Many methods in use to-day are the gradual outcome and outgrowth of many minds, and cannot be credited to the suggestion of any one man. That which is most generally accepted and conceded as correct will be so emphasized.

The thing that the general practitioner in dentistry is employed to combat most is caries of the teeth; and the work of reparation constitutes the bulk of his business rather than efforts at prevention. Of course the reason for this is that people do not as a rule think a visit to the dentist in the least necessary until it is in very plain evidence *to them* that the teeth are carious; or not until an aching pulp suggests it with considerable force. If we could educate them that in nothing more than in the care of the teeth does the old rule hold good, "Prevention is better than cure," our professional efforts might be largely and most assuredly better applied in the science of Prophylaxis.

From a bread and butter point of view, perhaps, it is quite as well for us that human nature is perverse in not being willing to pay a fair fee for prevention—for something not yet on the scene.

So filling teeth and such matters as pertain to that work will naturally consume a large part of our time and study.

I am aware that it is often easier to tell how to do a thing than to do it. I am aware that it is easier to do it in one mouth than in another. I realize, and so must the reader, that willing and intelligent co-operation on the part of a patient makes success of certain

operations that would prove failures in the mouths of those less considerate of the disadvantages a dentist works under. A good proposition for some of your ever restless patients is to ask them to pass a thread through the needle's eye while you hold the needle. It is a "stunt" almost as hard as trying to pass a camel through that aperture. When the patient is satisfied with the futility of the effort, draw a nice little comparison with the work you are called upon to perform, every cut and stroke of which must be of the same delicate accuracy as trying to thread a needle under such circumstances, and a pretty fine one at that. The wonder is that we can do anything at all in some mouths. It is the personal equation that brings success,—the power to equalize or modify extremes. That means the knowing how coupled with persuasion, will power, hypnotism, diplomacy, tact or what you will, that overcomes difficulties,—that brings obstinate conditions subject to our manipulation. A true professional attitude is a large factor to begin with—an attitude of dignity that commands respect, which, though kind and considerate, makes your patient feel that you are there to perform a professional service, and not to be trifled with, or have your time wasted.

Getting down to the work, the first operation to be performed, as a rule, when a patient first comes into your hands, is to carefully remove all extraneous deposits—tartar. This is necessary to make a correct examination for caries. Then, with a diagram in hand on which has been written date, name and age of patient, a careful examination should be made over every surface of each tooth and every defect noted by markings on the diagram that will be understood when the patient may not be present. Besides using explorers, examinations should be made between teeth with floss silk, which will catch and rough up on the edges of cavities that may have been overlooked by exploring instrument. Further insight may be gained by wedging the teeth apart for a moment. It is also wise to note, for reference at any time, the temperament of patient and conditions of health or ill health that may be observed or that may be communicated to you in your effort to gain all information necessary to an intelligent handling of the case. It is important to know at the outset what constitutional troubles you may have to combat with your local therapeutics. Get all the information you can. Get all the family history you can. The more

you know of the traits, idiosyncrasies and heredity of your patients the more intelligently you can handle your case. The tubercular curse is perhaps among the most common conditions met hard for the dentist to contend with, say nothing of syphilitic conditions prevalent beyond the ken of most people not doctors or dentists, and often unknown to the person afflicted, innocent wives, mothers and children.

Having your diagram or chart with notations and history as complete as possible, keep it in indexed file where it may be readily found at each visit of the patient. It is a guide that no careful operator can well do without. As to the caries, it obviates looking them up a second time when in any way obscured. Mark up your finished work, time consumed and charges at end of each operation.

Coming to the use of instruments there is one rule that holds good always: Let every instrument be sharp that should be sharp. A dull cutting instrument or burr is an abomination.

Another even more important rule is to have all instruments not only scrupulously clean but carefully sterilized. The dentist who would carelessly carry infection from one mouth to another on unclean and unsterilized instruments is not safe to be at large. Plenty of water—running water, scalding hot preferable—used with soap and brush conscientiously will reduce an army of several million germs to, possibly, a few hundred, reducing the chances of carrying infection in like proportion. So clean the instruments first and sterilize after.

The equipment of a dentist should be complete. Many operations are absolutely dependent as to success, upon the correct design, condition and adaptability of the implement to be used. Old Uncle George Cushing—bless his soul!—used to say: "A two-inch augur won't make a one-inch hole, nor a one-inch augur a two-inch hole. You can't make a square stick fit a round hole, nor round stick a square hole. You can't drive nails with a lead pipe;" which all goes to show that the man who is not properly equipped is badly handicapped. A skilful operator may be able to fill a tooth with a broken nail for a plugger, in an emergent case, but if he wishes to produce ideal work he must use instruments properly designed and adapted. A large plugger should not be used when a small one would better serve, and vice versa.

To Dr. G. V. Black and the late Geo. H. Cushing, conjointly,

is due the credit more than to any others (and the gratitude of th profession) for an arduous task performed some years ago, i bringing order out of chaos as regarded the multitude of wha might well be termed nondescript instruments offered by dealers fo dentist's use. Along the lines of excavaters, chisels, pluggers, etc they went from A to Z and farther when necessary, to select ou from the mass such designs and shapes as had merit, inventing an designing when necessary, correcting angles and modifying crook and twists and blades until in the end they had arranged, classifie and correctly named and described with scientific appellation an systematically numbered all that they thought would make a den ist's outfit complete, so far as these lines go. Their work was recog nized of great importance and was unanimously approved, and believe that what they recommended has been adopted by the N tional Board of Faculties as the official outfit for each student, n optional but compulsory, to stand properly equipped with his clas

(Continued next month.)

Commuuisatsons regarding Progressive Course of Prac Instruction may be sent to AMERICAN DENTAL JOURNAL o Dr. George W. Cook, 47th and Kenwood Ave., Chicago.

ORIGINAL CONTRIBUTIONS

CONSERVATION OF THE DECIDUOUS TEETH.

BY W. J. TAYLOR, D.D.S., SACRAMENTO.

Despite the acknowledged advance made in dentistry during e past decade, we are often forced to witness the ravage caused the ruthless and needless extraction of the deciduous teeth.

That such extraction is made necessary is largely due to e ignorance of those who have children in charge allowing e destruction to go unchecked until reparative measures are of avail.

It is to be regretted that much of this wanton extraction is due the indifference or ignorance—or both—of those whose duty as ntists it is to preserve the deciduous teeth until the eruption of their ccessors.

On account of the important physiological and hygienic condi- ns which depend on the salvation of the deciduous teeth, we as rofession should do our utmost to preserve these teeth from the cess of decay and premature loss.

The nutrition of the developing child is largely dependent on the lthy condition of the masticatory organs. What, then, can be re harmful to the little one's digestion than a mouth filled with ious teeth, cavities containing a mass of decomposing food, teeth g since abscessed with pus exuding from the tissues passing from oral cavity to the stomach, there to vitiate the otherwise normal ctions? By the early loss of these teeth the mastication is im- ed, nutrition affected and the general vitality lowered.

Let us pause for reflection, and ask ourselves if we should not ve to correct such conditions.

Aside from the harmful effects produced upon the health of the d by the premature loss of the deciduous teeth, another important t must be duly considered. Many of the most difficult cases ented in orthodontia are the result of the injudicious extraction these teeth. The proper development of the dental

arches is arrested, the jaws shrink, and the necessary space for the regular eruption of the permanent teeth is entirely inadequate.

The eruption of the deciduous teeth is usually completed by the thirtieth month, and from this time the child should certainly be placed under dental care. In all probability it would not be necessary to perform any operation at such an early age, but it is a good idea to examine the little one's mouth, polish the teeth, and by a few gentle words gain the confidence of the little patient.

If the child's first visit to the dentist is unaccompanied by painful treatment it will be much easier to perform the operation when necessity demands it. Parents are often to blame for the feeling of apprehension which children exhibit on their first visit to the dentist caused in many cases by relating and exaggerating their own experiences within their children's hearing.

Much has been written upon this subject, and it is doubtful if anything original can be offered to solve the problems which often confront us, but, prompted by a recent experience, your essayist selected this subject, believing that it should receive more attention at your hands than it is usually given.

Not long since a lady brought to me a little girl of seven years. Upon examination I found the lower premolars in a carious condition, the pulp of one being in a septic condition, with exudation of pus through the fistulous opening, the tooth being quite painful.

The abscessed tooth was carefully excavated and sterilized with 3 per cent pyrozone, followed by an application of oil of cassia, cavity sealed and allowed a period of rest. At subsequent sittings the teeth were filled with combination filling of amalguam and cement and up to the present time have given no trouble.

On inquiry, I learned that a few days before the child had visited a dentist who would not undertake to fill any of the teeth, and advised extraction as the only means of alleviating the child's suffering, remarking that there was little use in filling the temporary teeth and that when they ached the best thing to do was to pull them out. I could hardly believe that with our present knowledge of the proper treatment of such cases such advice would be given. Doubtless such advice is often given because the dentist is either too busy to properly care for these teeth, or totally indifferent to the future welfare of the patient. It is needless to state that in this particular case the dentist had little conception of the duty he owed his little patient.

We owe it to those who are placed under our care to use as much ability and perseverance in the preservation of the temporary teeth as we would were we attempting to preserve the permanent ones.

Caries of the deciduous teeth may be divided into three classes: First—Enamel and dentine scarcely affected. Second—Deep-seated, with living pulp. Third—Deeper-seated, with decomposed pulp.

In caries of the first class there is little pain, and it is only necessary to remove all carious substance and fill cavity with such material as your judgment may select. In small approximal cavities of this character, to avoid unnecessary infliction of pain and to shorten the operation, the use of gutta-percha,—pink for the posterior and white for the anterior teeth, first moistening cavity with oil of cajuput to make adhesive,—will prove satisfactory. Small cavities on grinding surfaces may be successfully filled with either amalgam or cement; preferably the former, on account of its durability.

Cavities of the second class are usually the most painful, and consequently difficult to handle, requiring the most careful excavation for fear of wounding pulp. If metallic filling is to be inserted, some non-conducting material should be used over pulp. I have successfully used a small concave aluminum disk filled with paste of oil of cloves and oxide of zinc. If pulp is exposed, devitalization is the proper procedure, as pulp capping usually proves a failure on account of the organic structure of the tooth.

When devitalization is indicated, my method is first to obtain perfect dryness by application of rubber-dam, or napkin, held in position by aid of clamps, together with use of saliva-ejector, carefully excavating diseased tissue, then applying to exposure small piece of blotting paper saturated with solution of arsenical paste in carbolic acid, this being allowed to remain from twenty-four to forty-eight hours, after which pulp may be removed with very little pain; cavity is then treated with oil of cassia before filling.

Where the conditions are such that this method is impracticable, a pledget of cotton saturated with either tincture of iodine or concentrated spirits of ammonia may be applied; these are not as satisfactory, owing to the numerous applications required to obtain desired results. Pure arsenic is interdicted as a devitalizer of deciduous teeth, due to its rapid absorption by the tissues.

In cavities of the third class, cavity should be opened freely and all disorganized tissue removed, thoroughly sterilizing cavity and

root-canals with 3 per cent solution of pyrozone; treat with oil of cassia or other good antiseptic, and allow period of rest; treatment may then be removed and canals filled with paste of iodoform and carbolic acid, followed by filling of suitable material. Canals should not be filled with cotton.

Cases of septic poisoning, accompanied by rigors and fever, often result from neglect of abscessed condition of temporary teeth.

Resorbtion of roots occur even after pulp is destroyed if pericementum has not been affected by pyogenic organisms. If it does not occur when it is apparent that its successor is to erupt, temporary tooth should be extracted.

If conservation of the deciduous teeth largely depends upon the ability and advice of the dental profession, it is surely our duty to do all in our power to preserve these teeth for the benefit of those who are placed under our professional care.—*Proceedings California State Dental Association.*

CEMENTS.

BY W. V-B. AMES, D.D.S., CHICAGO, ILL.

The chronology of the utilization of cements in dental practice will not be included in my presentation of the cement subject, neither shall I go to any extent into the literature pertaining thereto. Works on general chemistry furnish almost nothing bearing directly upon the composition and application of such cements as oxychlorids and oxyphosphates, and dental chemistries give rather briefly only some stereotyped information of no value to one attempting a serious study of this subject. Flagg's "Plastics" has some statements which cannot be overlooked, and the paper of Dr. J. E. Hinkins and Prof. S. F. Acree before the Third International Dental Congress* is of such scope as to be either valuable or misleading. Dr. Flagg has much to say of the usefulness and uselessness of both oxychlorids and oxyphosphates, and regarding the latter makes a radical distinction between what he calls an oxyphosphate of zinc cement made from ordinary zinc oxid and phosphoric acid, and zinc phosphate cement made from nitrated zinc oxid and phosphoric acid. My only comment on this distinction will be that I do not think that any chemical analogy can be brought forth which would support such a distinction, and as, outside of dental college chemical laboratories, ordinary zinc oxid is not used at present for cement-making, there cannot be much need of the distinction.

This term, "zinc phosphate cement," however, leads up to the point of the paper of Dr. Hinkins and S. F. Acree, of which I wish to have most to say;—after, however, first expressing my appreciation of that part of their paper which gives the results of the action on cement masses of the acids produced within the oral cavity. This part of their work I hope to see carried farther.

They say, in the part of their paper devoted to the chemistry of cements, "The term 'oxyphosphate of zinc' is a misnomer. Upon looking through the chemical literature we find no such substance described."

Now, if this failure to find a description in chemical literature were a sufficient reason to brand the term a "misnomer" from a

* See *Dental Cosmos* for June, 1901, p. 581.

chemical standpoint, I would say that we were still justified in using the term from a physical point of view, if, as Mr. Acree seems to contend, the zinc oxid is held in mass by zinc phosphate (supposedly the normal phosphate). But is a writer justified in branding a term a misnomer because of inability to find the compound to which it applies described in chemical literature? I think not. I will venture the statement that if chemical literature covered and included all information of value acquired by workers in *applied* chemistry, the volume of said literature would be doubled.

From our standpoint as users of what we will still call zinc oxyphosphate we will assume that normal zinc phosphate, $Zn_3(PO_4)_2$, is of interest chemically. In searching all available authors we find in two instances very brief mention of *zinc phosphate*. Bloxam says: "Zinc phosphate forms the mineral Hopeite, $Zn_3(PO_4)_2$, $4H_2O$," and Prescott and Johnson, in enumerating the precipitates of different metallic salts by an alkaline phosphate, say: "With zinc salts the precipitate is dimetallic, $ZnHPO_4$, or normal, $Zn_3(PO_4)_2$." Thorpe ("Dictionary of Applied Chemistry"), Watts ("Dictionary of Chemistry"), Comey ("Dictonary of Chemical Solubilities"), Remsen, Roscoe and Schorlemmer, Dammer, Adolphe Wurtz, Mendelejeff, and Miller ("Inorganic Chemistry") have been searched in vain for reference to the compound "phosphate of zinc." Now, if among these recognized authors the normal zinc phosphate was entitled to so little consideration, is there any justification in claiming the term "zinc oxyphasphate" as a misnomer, when the only use of the compound has been as a dental cement, and that for little more than twenty years? Zinc phosphid, long used in medicine, gets a full mention by all authors. Zinc oxychlorid, used at a much earlier date in dentstry, and along with magnesium oxychlorid in the building arts, comes in for but slight recognition in chemical literature. An oxychlorid is looked upon as a basic chlorid. I will end this rather too extended theoretical consideration of the subject by merely venturing that, in the course of time, the cement-making phenomena manifested when zinc oxid in excess is intermixed with a phosphoric acid solution will be recognized in chemical literature as nothing more nor less than the formation of basic or subphosphate of zinc, holding in mass the excess of oxid, and will be called "oxyphosphate."

With nearly all references to basic or sub salts there is an uncertainty expressed by the analyst as to their exact composition, it being often surmised that the basic salt as found or obtained in analyses can be basic in degree, *i. e.,* there are usually several basic salts intermingled with the normal. Zinc oxychlorid, according to different investigators, seems to exist in several degrees. (Comey, "Dict. of Chemical Solubilities" gives five Zn oxychl.)

The most reasonable supposition seems to be that in both zinc oxychlorid and zinc oxyphosphate the material agglutinating the zinc oxid granules is a basic salt containing water of crystallization, and that this basic salt is of variable composition, depending not only on the particular nature of the ingredients, but upon the manner of mixing the cement. It will no doubt be some years before the true nature of these compounds is arrived at with any degree of definiteness. When this point has been cleared up, I believe that we will be in position to formulate quite definite rules for the mixing, treatment, and using of these cements. The chemistry of the cement question is far from having been settled for all time,—although said to have been disposed of by some recent writings.

The physical and qualitative chemical conditions of cements of which I am in position to speak must be referred to tersely, for the sake of brevity and because I have already given in other papers nearly all that I am able to give to-day.

There has been mention of the difference between cements in which the phosphoric acid is modified by alkaline phosphates soluble in saliva (glacial phosphoric acid), and those in which the phosphoric acid is modified by non-alkaline phosphates insoluble in saliva, the first class givng a porous, friable mass, not hydraulic, the second giving a non-porous, vitreous mass, in some cases hydraulic to a high degree. This possible hydraulic feature must be considered of the utmost importance.

The trend of improvement is today, I believe, in the direction of the production of cements which are hydraulic to a marked degree, without sacrificing other desirable qualities. In a paper before the National Association, in 1899, attention was called to the fact that these porous cements show no shrinkage or expansion (no change at periphery) in either the wet or dry state, because there is shrinkage towards an infinite number of centers, and that in the non-

porous variety there is a shrinkage toward one center in a dry state, and an expansion by the taking up of water of crystallization in a moist state, so that there is a decided argument in favor of cements which are really hydraulic, as then nearly the entire hardening process may take place with the mass under moisture. The time has come and passed for the abandonment of the idea that cement fillings are better for being kept dry for an indefinite time.

In the same paper the comparative strength of cements from coarse, medium, fine, and impalpable powders was noted as increasing up to a point nearly approaching impalpability, and then dropping off as that condition seemed to be reached.

The fineness or coarseness of a given powder decides or fixes the rapidity of setting. A given powder in a coarse state with a given phosphoric acid solution will be slow of setting, and the same powder reduced to a finer state will give quicker settiug just in proportion to the fineness of division, for the simple reason that in the fine state there is more surface of oxide granule exposed to the action of the acid. A difference of fineness of powder most often accounts for the differences in the behavior of packages of cement supposed to be identical.

In that paper also, as well as in one published in the *Items of Interest* for February, 1900, the arsenical contamination of cement powders was described in such a way as would enable a fair-minded man to conclude that the infinitesimal trace of arsenic contained existed as zinc arsenite, and then if he will endeavor to destroy pulps by the application of zinc arsenite, or take my word for it that various teeth have remained comfortably *in situ* for more than three years with a considerable quantity of zinc arsenite inclosed beneath fillings, it seems that the arsenical contamination of cements ought to be forever dismissed as a factor in the question of "Why do pulps sometimes die under cement fillings?"

According to most comments on phosphate cements, the opinion seems to prevail that the integrity of the mass depends almost wholly on the cement-making property of zinc oxid, the calcium-aluminum-silicon combinations being left out of the consideration at present. It is generally believed that the addition of any other oxid or wholly insoluble material is merely for the purpose of pigmenting or helping the mass to better withstand attrition.

In the past thirteen years I have from time to time found various instances of metallic oxids, other than zinc, either giving a cement when mixed with phosphoric acid, or modifying very beneficially the behavior of the zinc oxid and phosphoric acid. Oxides that may be named which themselves can make cements with phosphoric acid, are copper, (cupric and cuprous), iron, mercury, gold, silver, and a compound aluminum-cobalt oxid (cobalt blue.) Any or all of these can be blended with zinc oxid for pigmenting or for modifying the working qualities of zinc phosphate cements. Calcium oxid, the use of which along with alumina and silica, antedates all other oxids as a phosphate cement-maker in chemical knowledge, acts very violently with phosphoric acid, and naturally hastens the setting of a zinc phosphate cement to such a degree that its use for whitening such a cement is out of the question, and oxids of aluminum and silicon act only as foreign substances, to the detriment of the result, according to my observations.

Thus, any beneficial combination must have a darker color than the straight basic zinc oxid. In using phosphate cements I have become more and more convinced that as much benefit is derived by making combinations which give mixed shades of gray, brown, blue and green, and as be gotten by blending with basic zinc oxid the cement-making oxids mentioned.

As a result of ascertaining these cement-making properties of the more or less dark-colored oxids, I have derived much benefit in my practice from the use of cements made by incorporating plain cupric oxid with phosphoric acid, or, as conditions sometimes indicate, a combination of cupric oxid and other of the metallic oxids mentioned. Such cements have come to be known as "oxyphosphate of copper" in the simple form, and "new process oxyphosphate of copper" in the compound form.

Committees have been appointed to make tests and experiments with these new combinations. Efforts were made to get the committees together today.

We find, as peculiar to the materials and as differing from zinc oxid cements, for instance, that the maximum density is obtained from a creamy mix rather than from a stiff or putty-like mix, as is the case with the zinc oxyphosphate. With these cements there is obtained a decided embalming effect of semi-decalcified dentin

and of thoroughly decalcified dentin, which is peculiar to copper salts.

These materials are extremely bland when used near the pulp or in contact with gum tissue, and seem to have a very salutary effect upon inflamed pulp or gum tissue. A large buccal cavity, for instance, into which the gum has overlapped and become angry and ragged,—the gum will shrink away, and take on a condition where it is rather difficult to start a hemorrhage. You really have to lacerate the tissue before there will be a flow of blood, and the effect of the contact with gum tissue is such that in a multi-rooted tooth, where there has been extreme recession of the gum, and a pocket at the bifurcation of the roots, this space can be literally filled with the straight "Original" oxyphosphate of copper and cause a shrinking of the tissue, and also the correction of the tendency to suppuration, to such an extent that the tissue becomes healthy and suppuration ceases. Many cases of active pyorrhea have been cured by this simple method. The material has the property of taking up a slight trace of moisture which may be present, and will adhere to a plain surface after being made only reasonably dry, doing away with the necessity of undercuts entirely. It is especially useful for filling the open fissures of newly erupted permanent teeth,—that is, first, second, or third molars, which can be done with very little preparation, and is a most useful material for filling cavities in deciduous teeth because of its embalming properties and because a trace of moisture will not interfere with its adhesion. The setting process is so rapid when it is properly mixed that submersion soon after insertion does no damage.

Many other uses might be mentioned,—so many that to me and to others it has seemed that if it were not for the color of these materials, there would be little excuse for any other cements.

This paper will not be complete without some consideration of zinc oxychlorid. A practical oxychlorid may be simply a nearly saturated solution of zinc chlorid and a good basic zinc oxid, but nearly all preparations of this kind available are compounded for quicker setting than such a formula would give.

A straight zinc oxychlorid is rather too slow in its setting to at first appeal to the manipulator, but when the utility of such a compound is noted in comparison with any modified zinc oxychlorid

known to me in which the modification consists of the addition of other oxids calculated to hasten the setting, the superiority of the straight zinc oxychlorid leads one to compromise in the matter, and be satisfied to cover a pulp-capping or cavity linng for a day or more, when a satisfactory density has been attained. The modification of this material for quick setting usually consists of the addition of calcium oxid. After having had experience previous to the general use of oxyphosphates with the oxychlorids of commerce, all of which known to me were modified for quick setting, and more recently with straight zinc oxychlorid, I am quite positive that much or all of the tendency to fail at the cervical margin was attributable to the modifying ingredients, so that after seeing disastrous failures from my early use of oxychlorids, I feel that I might now safely fill approximal cavities reaching the gum line with a straight zinc oxychlorid, if there were not other cements more reliable for withstanding *mechanical* destructive influences. I will wander from my subject to the extent of saying that for cavity lining I consider it the cement *par excellence.*

There has been much energy expended upon attempts to utilize the cement-making phenomena developed when phosphoric acid solutions and calcium-aluminum-silicon combinations are intermixed. About 1895, a preparation called "Dentos" was vaunted by a leading manufacturing house as the long-looked-for, indestructible plastic filling material. My personal experience with it was disastrous, as was the experience of all others, apparently, since the material very soon passed into obscurity. Fillings were made of this preparation which withstood the oral secretions and attrition admirably, only to be failures from decay all about the mass, because of shrinkage, not perceptible till made evident by the decay of the cavity wall.

More recently a similar preparation has been much vaunted as the millennium-maker. As it has not been possible for me to make a test filling of this preparation in the regulation size cavity in steel testing tube which would hold up within eight points of zero, even when submerged in water while hardening, and since the breaking-down of edges of fillings shows a shrinkage and absolute lack of adhesion to the cavity wall, I am obliged to say that the much-sought-for result has not been attained in this material. The power of the ultimate product of an admixture of this sort to with-

stand the destructive tendencies of alkaline solutions and organic acids makes investigation along that line quite fascinating. If this tendency of these products to shrink during hardening can be overcome, we will have a preparation which may possibly have some special uses, and yet, if it cannot be so compounded as to give a more dense and resistant mass than can be made from a modified zinc oxyphosphate, then there would only be left for it the filling of a few well-protected cavities for which we have already a reliable material in a properly modified gutta-percha.—*Transactions of State Dental Society, State of New York.*

TEACHERS AND TEACHING.

BY FRANCIS M. PARKER, B.L., D.D.S., LOS ANGELES.

At no time in the world's history has the investigating student been more patient and earnest in delving deep for that purest gem, knowledge, than he is today, in this the early part of the twentieth century: fitting himself to do something for the uplifting of the human race, that vice and ignorance may be lessened, and pain and suffering eliminated, broadening his view of life and making it worth the living.

If we should for a moment turn over the pages of history we would find from the earliest records down to the present time men who, from their investigating turn of mind, and superior attainments from long study and retentive memory, had far outstripped all of their associates in some general or special line of information, and that young men thirsting for greater knowledge came from remote parts of the earth and attached themselves to these sages, the students being called deciples or followers.

Who are teachers? In short, we might place all who are in our profession as teachers; though all members of the profession are far from endeavoring to do their work conscientiously yet they do seek to guide, instruct and give counsel to their patients. It is generally understood, however, among the members of the profession to more especially mean those who are actively engaged in teaching our dental schools.

That there are degrees among teachers, from absolute to comparative, no one can successfully deny; and these range from the philosopher to the knave. We have the great specialist, who has scarcely any power of generalization, nor can he outside of his narrow vision barely comprehend his surroundings; all right in his place as a good investigator, but absolutely bad as an instructor. Then we have the young and inexperienced, whose one burning desire is to create in a day for himself fame and fortune, or at least notoriety. We next find what some are pleased to call the "plodder;" never made an offhand speech in his life; modest as the coy maiden; not teaching for fame, but for the very work's sake, and, best of all, students passing through his classes understand the subject over which they have gone. Give us

more "plodders" in our schools. Under this head we might enumerate the good and bad qualities of the teacher, commending the good he does, suggesting improvement in this or that line of work, and winking at perhaps his absolute lack of ability and the untold injury he is doing the profession at large with his constipated ideas and flood of empty and meaningless words.

It may sometimes happen that an instructor is engaged to teach in our dental schools perhaps for some influence he is supposed to wield; or it might be that the would-be instructor is an able-bodied politician, with absolutely no ability as a teacher of the subject for which he has been chosen. But may we not take upon ourselves the office of the critic, when we are wholly incompetent to point out the means and methods the instructor should adopt and follow?

The mistake that many of our professional brethren make is that they honestly believe they are or would make first-class teachers, forgetting that many are called but few are chosen. They have, unfortunately for themselves and all concerned, answered the call for a teacher when it was that for a farmer that they should have responded.

Is it then assumed that the successful teacher must be to the manner born; although he be a natural teacher, it is here suggested that it would be of incalculable benefit to him and those who employ him if he should at least spend two terms of nine months each attending a normal school, organized to teach the dentist to be a teacher.

Every one who is interested in the higher education of the dentist should look forward with gratification to the time when the National Association of Dental Faculties will organize a normal school for this purpose, and require all who desire to teach in dental colleges to take the normal course, that those who graduate from the colleges of the Association may be thoroughly prepared, worthy and well qualified to take up their life work when they go from their Alma Mater.

Why are they teaching? It is frequently asserted by those who are not actually engaged in teaching that the instructors in our schools have some selfish and ulterior motives or they would never take up such onerous and burdensome duties, saying that the ablest men in the profession have not nor will they take the time, and that they would not lower themselves by assisting in grinding out graduates at so much per grind, to divide up business, probably putting

more quacks in practice, thereby lowering the standard of the profession and otherwise degrading one of the noblest of callings.

It might be possible that there is some foundation for the assertion that is sometimes made against teachers when it is said of them that the hope of financial reward is the great incentive for taking hold of college work. This may or may not be true; generally untrue, as it is very doubtful if any college teacher is making anything to compare with what he makes in his practice, by being connected with an institution of this kind. In fact, teachers are nearly all working for empty honors

Each accusation might be as easily dismissed, for many of the teachers in the dental schools are sacrificing themselves, not upon the altar of ambition, but that the coming generation may be better fitted to advance the profession to a still more honorable position, thus keeping the American dentist far in advance of his professional brethren as a whole, from any other part of the world.

A few words about the methods that are employed by instructors. The technology of teaching dentistry is at the present time divided under two general heads, viz.: technics and lectures. In technics the student performs upon inert substances the same operations that he will afterwards perform upon patients, consisting of cavity formation, the filling of the same with all the different materials used for filling of teeth, the making of sections of the teeth so that root-canal treatment may be better understood, the cleavage of enamel, the taking of impressions (generally of each other's mouth), making of the various kinds of dentures, and actually learning how to perform operations of the various kinds without having handled the patient; thus giving them the manual dexterity which they need; for, after all, it is the little mechanic in the ends of the fingers that makes the dentist a success.

In the lecture-method students are instructed by chart and a liberal use of the blackboard. But the lecture method is a failure, unless accompanied by large and repeated doses of technical work. Another cause of failure of this kind of teaching is that the instructor is not capable of talking off-hand on his subject, does not know it very well himself; besides he is not eloquent, nor even a fluent talker; perhaps reads what he wishes the students to hear; tells a few moth-eaten sixteenth century jokes, and his hour is over, and not a single idea impressed on the minds of the students. Ask the student at the

end of the session if he feels that he has made any progress, the reply is sometimes "y-e-s; but we have had a great deal to endure from lecturers and their methods."

It would seem then, that, if instructors would confine themselves more particularly to the recitation method, much more from a theoretical standpoint would be accomplished, as a well-grounded theory can be put into practice. Certainly an instructor makes unnecessary work for himself when he copies from a good text-book, then goes before a class and reads what he has written. It would have been far better to have assigned the lesson in the text-book recommended by himself, and have quizzed straight through to the end of the recitation, enlarging and explaining that which the students did not easily comprehend.

There is small wonder that some instructors always feel nervous when they go before their classes, as many who are now attending dental schools have superior educational advantages; some have had experience as a teacher, and others have attended some professional school and know what is first-class teaching.

If, then, dental schools desire to reach that degree of excellence in instruction, for which all lay some claim, let them secure instructors who are broadly educated as well as specially informed upon the subject (in conjunction with the normal course) which they are teaching. Five good instructors in a faculty are worth twenty-five poorly infromed teachers. The future education of our sons and daughters are primarily in the hand of the dental schools. Would it not then be in the province of any State society to look closely into the curriculum of the schools located within their respective States? Should a school not be living up to its declarations and the National Association requirements let the society place the ban of its disapproval upon that institution until such time as the said school sees fit to raise its standard.

Upon every teacher rests a solemn and binding obligation whether he realizes it or not. If he is faithful to the trust imposed on him, future generations will rise up and call him blessed, for his name shall long be remembered in that goodly land.

An educational institution that desires to send out broad-minded, well-equipped graduates, men and women, who will be an honor to themselves, and of real benefit to humanity, must take cognizance of the fact that like begts like. Narrow-minded, bigoted and self-

ish teachers make narrow-minded, bigoted and selfish students. On the other hand, the broad-minded, liberal and self-sacrificing teachers leave their impress upon the student's mind; no matter what the future environment may be, it is never quite eradicated. Firing their ambition to emulate and excel those whom they have crowned the ideals of their college days: days which some back to all of us, like the softly entrancing strains of far-away music, or like the gentle, dreamy hum of the busy bee in the old apple orchard of other days.—*Proceedings California State Dental Association.*

BACTERIOLOGY AND PATHOLOGY.

By Geo. W. Cook, B. S., D. D. S., Chicago, Ill.

In considering the special pathological conditions of the oral cavity there are a number of factors to be taken into consideration. The first one that attracts our attention is that of the mouth itself. We have a partially closed cavity lined with a peculiar epithelial structure that is subjected to a great variation of changes, because of the unrest of certain parts of it when the individual is performing the daily functions of life, for instance, there will be a time when the oral cavity will be for a few moments subjected to the external atmosphere and in the next moment the atmospheric conditions may be changed from the external air to that of the internal air which is being exhaled from the lungs; and again the fluids of the mouth are changed with almost the same amount of regularity as that of the inhaling and exhaling of certain forms of gaseous substance. The temperature of the mouth is constantly undergoing variation, though it may be but slight it might under certain circumstances influence certain biological phenomena that are constantly going on in this cavity.

It is a well known physiological fact that one of the functional activities of the epithelial cells, let it be located internally or externally, is to guard against the actions of certain deleterious elements. In the oral cavity we have a peculiar epithelial structure, the functions of which it will be unnecessary to state, but suffice it to say that it is constantly furnishing a peculiar colloidial substance.

It might be well to mention here some of the peculiar properties of the mucin. This substance is found in tendons in the umbilical cord. They possess a slightly acid property and are soluble in only water when it is slightly alkaline, and is precipitated by the addition of acetic acid; but when a 5 to a 10 per cent. solution of sodium chloride is used precipitation does not take place. Mucin when in a neutral salt solution is readily precipitated by the addition of alcohol; it happens, however, that the same results can be obtained with the salts of many of the heavier metals. In the earlier investigations on the chemical constituents of mucin, it was thought when a 2 per cent. solution of hydrochloride acid was added and heated on a water-bath and tested with Fehlings solution, it would invariably give the carbohydrate reaction, but the substances that gave all the

characteristic appearances of a carbohydrate proved to be another substance very closely allied to the carbohydrate, probably some of the derivatives of the glucoproteid bodies. The question may be asked: What is understood by the glucoproteid substance? The glucoproteid substance is an albuminous radical in combination with some member of the group of the carbohydrates. A large percentage of mucin seems to be made up principally of the glucoproteid substance. The molecular structure of this substance seems chemically to be made up of carbon, hydrogen, nitrogen, ogygen and sulphur. It seems that many members of this group have been found to contain in addition in the above named elements, phosphorus. They are then known as the phospho-glucoproteid bodies.

Miller and Seeman succeeded in isolating a crystalline-like substance from mucin, which according to their views was a highly complex substance, which evidently gives the acid reaction found in mucin. This substance at present is known as chondrotin-sulphuric acid. There has been isolated from mucin a substance as has already been said that resembles in its general characteristics a carbohydrate proper, in the strictest sense of the meaning, but belongs to the group of the glucosamin. There is another class of chemical complex molecular structure that enters into the general group of nitrogenous carbohydrate-like bodies, the hyalogens, which belongs to a class of albuminous substance; but when treated with an alkili and a carbohydrate is added the albuminous radical hitches on to a particular member of the group of carbohydrates, forming the so-called nitrogenous carbohydrate group.

There is to be found in mucin the mucoids and mucinoids, a chemical group that is very closely allied in their chemical constituents and seem to carry with them certain chemical properties that have many of the general chemical characteristics of each other, forming, beyond question, a far reaching biological chemical phenomena, which up to the present has been but little considered in the phenomena of immunity and susceptibility. Gugenschmidt and Miller, so far as I know, are the only ones that have called attention to the possibilities of the saliva carrying with it certain of the so-called immune bodies, that beyond question exist in the animal economy. The chemical nature of haemolycins, agglutinis, precipitins, and coagulin and the part they play in carrying with them

the so-called immunization bodies, is a question of which biological istry is but on the threshold.

In the study of saliva we are constantly reminded of the fact that it contains a variable quantity of the so-called salivary corpuscles, which comes principally from the mucous membrane of the mouth, and resembles in their characteristics young leucocytes; and are evidently formed in the lymph follicles of the mucous membrane. So it will be fair to presume that these corpuscles are the agents through which the immune bodies are transmitted to the saliva proper. Saliva as the word implies is the product of activity of the salivary glands—is a physiological solution, the chemical composition of which is qualitatively quite constant but quantitatively has a considerable variation. This has been alluded to as being the result of all the glands not being of one kind. The parotid glands have been classed as the albuminous glands, the sublingual as mucous glands, and the secretion from the submaxillary is looked upon as a mixed fluid. These glands all have a double nerve supply, one branch coming from the cerebral centers, while the other comes from the sympathetic system. It has been found that when the sympathetic fibers have been stimulated the secretion which is furnished is lessened in amount and contains a larger amount of solids.

Of recent years it has been a question as to the quantity of albumin that passes through the salivary glands and becomes a product of the excreted fluid. At present the opinion is that it is not transferred into execreted products of the glands, but that it is converted into mucin and ptyalin. It is, however, a fairly well established fact that these last two named substances, mucin and ptyalin, are later transferred into mucin and ptyalin in coming in contact with the air; for it has been found that the substance known as ptyalin is practically inactive in its activities on starch when excluded from the air. Ptyalin has the power of converting starch into sugar, the sugar becoming one form of maltose. The saliva has no invertin, consequently maltose may be changed slightly into glucose. So far as the chemical constituents of ptyalin there is but little known: however, it is usually regarded as a nitrogenous substance. Human saliva contains traces of other ferments such as maltose and oxydase. This last named substance, the character of which is unknown, may have a biological importance in the physiological functions of saliva.

It might not be out of place to state at this time that ptyalin is an amylolytic ferment, and under favorable circumstances its general characteristic action is a hydrolytic one. It has been demonstrated that in the decomposition prodeucs of substance that ferments give rise to, that the amount of water is increased; and experiments show that a watery solution of a starchy substance can be increased into a greater electrolytical conductivity when dyatase is added, which shows that there are present disassociated molecules of water. But, as yet, our knowledge of the phenomena and the processes of the hydrolytic action might be considered as katalytic action, which is an action by contact. There are certain of the metals which when finely divided have somewhat the same action as do ferments. It is a well known physiological fact that certain glands and organs of the body are capable in their activities to give rise to certain substance which we call ferments. These ferments have an enzymatic action, both organic and inorganic substance; and these have been looked upon as a special vital force, but gradually many of these activities are being explained on truly physical laws which are constantly being observed in the world of inorganic substance. Another point to be observed in regards to the action of these enzymes is that they act upon substance entirely out of proportion to the quantity of enzymes that may be present. The same is true of a number of metals and their oxides as, for instance, a colloidial platinum, and when 70,000,000 liters of water show a perceptible action on one million times the quantity of peroxides it was further demonstrated that no preceptible quantity of platinum went into solution. Platinum, pallidium, iridium, etc., have an enzymatic action on cane sugar (Bredig Von Berneck & Jones). This action is called the surface action of metals. The colloidial action of metals has been extensively studied by the above named authors, also Hardy and Mathews. The question may arise in the minds of some: Why should this subject interest us as dentists? This to my mind has an important bearing upon the secretions and the activities of the enzymatic or katalytic action of bacteria in the oral cavity.

The ferments called invertin have an action very much like the amylolytic ferments. They have a specific action on cane sugar, maltose, lactose, maltases and lactases, and are found in the saliva and pancreatic juice, and also in the intestinal juices. Another ferment is the steatolytic. This substance has the power of converting

fat into glycerine and fatty acids. This ferment has been named steapsin of the pancreatic juice. It is also found in grains and linseed.

Of the so-called coagulating ferments, one has the power of coagulating the blood and another one has the power of curdling milk. The former is classed among the fibern ferments; the latter chemocin is found in the gastric and pancreatic juices. Many bacteria have the power of producing a ferment that resembles the two last named ones as, for instance, the micrococcus, urea, bacterium urea, and the bacillus fluorescens. The protolactic ferments are called animal ferments, and have the power of digesting the various albumins, bringing about a substance known as albuminose; and some of these ferments will carry their activities even still further on into the organic world and cause the decomposition of amido-acids, hexon bases, etc.

There is a number of so-called tissue ferments that are very closely allied to those we have just mentioned, and are the products of the liver, spleen, the adrenal glands and also the muscles. They all have a hydrolytic action on both albumin and carbohydrate substance. It will be seen that all of these ferments are the products of the physiological activities of the cells and glands that enter to a very large extent into the digestive apparatus. As has already been said their biological phenomena is but very vaguely understood. As we have previously mentioned, there are many metals that influence colloidial substance in their electrolytical activities and also in a fermentive way. The saliva as it flows into the oral cavity, and the mucin coming from the lymph follicles carry with them disassociated inorganic salts. It will be well to give the organic analysis of the saliva as found by various investigators:

	Frerichs.
Water	994.1
Solids	5.9
Soluble organic matter	1.42
Inorganic salts	2.19
Mucus epithelium	2.13
Potassium sulphocyanide	0.10

An analysis of the inorganic salts, moreover, calculated for 1000 parts by weight of mineral ash, gave the following results:

Potassium	457.2
Sodium	95.9
Oxide of iron	50.11
Oxide of magnesium	1.55
Sulphuric acid (as SO_3)	63.8
Phosphoric acid (as P_2O_5)	188.48
Chlorine	183.52

The sulphocyanides are frequently, in fact, almost constantly present in the saliva of man; nitrates are also present. They are, however, sometimes absent, but this is an exception rather than a rule. Investigations have been carried on to ascertain whether or not any of the extractive substances are eliminated by way of the salivary glands. Traces of urea, cholesterin, lecithin, leucin and also uric acid have been found in some of the gouty conditions, but this is a very unreliable source to hope to trace any of the mucleo albuminous substance, unless by some process the body has been rendered incapable of carrying away through the physiological channels those substances that are intended to be disposed of in that way. The system might then become so over-charged that certain of the glands that enter into the physiological secreting of certain digestive substances would take on a pathological process and eliminate a certain amount of these waste products, but if the constitution of the individual had become so diverted from the normal function of activities as to eliminate the waste products through the salivary secretions, this condition could be detected through other channels long before it made itself manifest in the saliva. In 1881 Gautier found a number of toxic substances in the saliva, which evidently belonged to the leucomain group that had more or less a narcotic effect towards birds. He accomplished the isolation of this chemical agent by the following method: An aqueous solution of saliva was slightly acidulated with dilute hydrochloride acid and then precipitated with Meyers reagent; the precipity was then washed and decomposed by hydrogen sulphide and then filtered; then the filtrate was evaporated, and upon microscopic examination the residue was composed of slender needles of a soluble hydrochloride. This salt was then purified by the extraction with absolute alcohol, forming a soluble crystalline, but easily decomposable double salts with plat-

inum chloride and with gold chloride. This solution of hydrochloride when added to potassium, ferrocyanide, and ferric chloride, gave the reaction of Prussian blue; and when injected into birds gave more or less stupor. The discussion and study of leucomains would be an interesting subject if there were space and time that could be devoted to that subject.

We have given in a somewhat general way the most important physiological products of the mucous and salivary glands. We have seen that various elements enter into the chemical composition of the fluids of the oral cavity. Now the question naturally arises: What biological influence does this secretion have upon bacterial cell life? There is scarcely a micro-organism that is found in any way about the human body but what at some time or other has very likely been an inhabitor of the oral cavity. The question then arises: Why don't these micro-organisms soon develop to an enormous number and cause the entire destruction of the teeth and mucous surface? As has already been suggested, there must be a constant protective force acting at any and all times against these destructive agents. Why is it that all mouths are not alike in bringing about this protection at any and at all times? The same question might be asked in regard to all the diseases of the human body. It has been found in experimental research that saliva of different individuals must have a different action towards the growth of bacteria. It is due to some of these ferments that we have just discussed, carrying with them a bacterial lycin.

There is probably no more interesting scientific demonstration given to the field of bacteriology than that one where Pfeiffer when he demonstrated that the bacterium known as the cholera bacillus, if placed in the peritoneal cavity of a guinea-pig that had been immunized to cholera, and the bacterial cell would gradually undergo disintegration in the peritoneal fluid. This went to show that the action of the cholera bacillus that was inoculated into the animal body left some sort of substance in the animal that would cause the disintegration of the bacterial cell, that was placed in the body fluid. This condition is not only true with the cholera bacillus, but is also true of the typhoid and many other micro-organisms. For instance, when a person has passed through a certain infectious disease like typhoid fever, if a drop of blood is taken from the patient and the bacillus of typhoid is placed in it, they will be found

to immediately clump together and finally the cells will begin to undergo a disintegrating change. With this agglutinating process or the clumping together of certain forms of these micro-organisms, it was found that a bacteriolytic action was discovered in certain serum, and certain serum that did not cause the clumping together of the bacterial cells caused disintegration of the micro-organisms.

(To be continued.)

THE COMPARATIVE VALUE OF ORDINARY SEALINGS FOR ROOT-CANAL DRESSING AS EXCLUDERS OF BACTERIA.

BY A. E. WEBSTER, M.D., D.D.S., L.D.S., TORONTO, CANADA.

In presenting this subject, I wish to say that there is no finality reached nor any positive conclusions arrived at. It is simply a report of progress gathered from a few pages of my experimental record book.

The literature of the profession has but very little to say about how dressings should be sealed into cavities in teeth, or what material should be used. The fact is that it does not seem to have concerned the profession very much. Dr. Harlan says some strong things against sandarac and cotton in his lectures to the students of the Chicago College, and at one time he wrote an editorial in the *Dental Review* expressing such views. He recommends cement or gutta-percha stopping, while others with equal vehemence proclaim the virtues of sandarac and cotton. Dr. Head, of Philadelphia, recently said that bacteria would pass through either gutta-percha or cement.

In the *Transactions of the National Dental Association* for 1901, on page 210, appears a table which is a report on some root-canal fillings made in teeth out of the mouth. In the table appears the statement that some fillings were perfect and some were imperfect. The manner in which these conclusions were arrived at is not stated, but it is fair to suppose that if there were no holes in the fillings large enough to be seen with the naked eye they were reported as perfect.

So far as I have been able to find out there never was any scientific reason for the statements just quoted. I have not seen a report of any experiments which proved or disproved any statement that might have been made in this matter. The fact of the matter is that each dentist uses the sealing material that to his mind suits the purpose for which he puts it in. Some dentists only reason for putting anything into a cavity in a pulpless tooth that they are treating is to keep the food out of it, so they fill it with plain cotton,

while others, desiring to keep the saliva out as well, use sandarac and cotton; others, again, wish to keep something in the cavity that they have placed there, and exclude everything else, so they use cement. These reasons are all right so far as they go, but why treat a tooth at all if it be not the intention to exclude that which makes treating a necessity,—bacteria? The aim of the surgeon of today is asepsis rather than antisepsis, avoiding infection rather than disinfecting, preventing disease rather than treating it. So if it be the intention,—and it ought to be, except in certain cases,—to so seal a cavity that has been once opened for treatment as to absolutely prevent anything entering it from the oral cavity and at the same time to keep a treatment in the cavity, the sealing must be fairly firm, non-contracting, and impermeable to everything that may be found free in the oral cavity.

Assuming, then, that it is desirable and sometimes necessary to temporarily seal a cavity in a tooth so that it may not become infected from the oral cavity, the question immediately arises: How shall this be accomplished, and what is the best material to use? There are so many complicating conditions in the mouth that the value of the sealings to resist the passage of bacteria must be tested in the laboratory. To do this in the laboratory the conditions must be as nearly as possible the same as exist in the mouth.

Glass tubes, about a quarter of an inch bore and two inches long, closed at one end and with a slight constriction about a quarter of an inch from the other, were filled with bouillon or beef broth up to the constriction and the open end plugged with cotton. These were sterilized on three consecutive days. The cotton plug was then removed and the sealing or temporary filling put in the end of the tube, using ordinary care and cleanliness. The tubes were immediately immersed in a beaker of freshly collected saliva and placed in the incubator. At the periods specified in the following table the tubes were taken from the saliva and washed off, slightly nicked just at the neck with a file, and broken across, exposing the bouillon, three loopfuls of which were conducted and spread on a slant of agar-agar. This slant was placed in the incubator and afterward examined, and if a growth appeared a stained section was was made.

After many infections occurred it became necessary to show that the organisms did actually penetrate from the saliva through the

sealing to the bouillon in the tube, and did not come from an infection from the filling material or from faulty technique. This was demonstrated in two ways:

First: An organism that occurs in about 9 per cent of all saliva and turns the media green (called *Bacillus pyocyaneus*) was isolated and identified in the beaker of saliva, and also isolated and identified from the bouillon in the tube.

Second: What is known as a control tube was kept, this being a tube carried through the regular process just as the rest, but not immersed in the saliva. In no case was the cotnrol tube infected.

All the tubes marked series A were put into the same beaker of saliva and carried through under the same conditions, and so with series B, C, etc.

GUTTA-PERCHA.

Series A.

Four tubes put into saliva.
In 24 hours 4 tubes tested. All infected.

Series B.

Four tubes put into saliva.
In 24 hours 2 tubes tested. Both infected.
In 48 hours 2 tubes tested. Both infected.

Saliva turned green and had a sweet clover odor. The slants had same characteristics.

Series C.

Ten tubes put into saliva.
In 24 hours 3 tubes tested. All infected.
In 48 hours 3 tubes tested. All infected. Media green.
In 72 hours 4 tubes tested. All infected.

Series D.

Ten tubes put into saliva.
In 24 hours 2 tubes tested. Both infected.
In 48 hours 2 tubes tested. Both infected.
In 72 hours 6 tubes tested. All infected.

TEMPORARY STOPPING.

Series A.

Four tubes put into saliva.
In 24 hours 4 tubes tested. All infected.

Series B.

Four tubes put into saliva.
In 24 hours 2 tubes tested. Both infected.
In 48 hours 2 tubes tested. Both infected.

Series C.

Ten tubes put into saliva.
In 24 hours 3 tubes tested. All infected.

In 48 hours 3 tubes tested. All infected.
In 72 hours 4 tubes tested. All infected.

Series D.

Ten tubes put into saliva.
In 24 hours 2 tubes tested. Both infected.
In 48 hours 2 tubes tested. Both infected.
In 72 hours 6 tubes tested. All infected.

OXYPHOSPHATE.

Series A.

"Ames." Four tubes put in saliva.
In 24 hours 4 tubes tested. All infected.

Series B.

"Ash." Four tubes put in saliva.
In 24 hours 2 tubes tested. Both infected.
In 48 hours 2 tubes tested. Both infected.
"Weston." Two tubes put in saliva.
In 24 hours 2 tubes tested. Both infected.

Series C.

"Ash." Ten tubes put in saliva.
In 24 hours 3 tubes tested. All infected.
In 48 hours 3 tubes tested. All infected.
In 72 hours 4 tubes tested. All infected.
"Weston." Ten tubes put in saliva.
In 24 hours 3 tubes tested. All infected.
In 48 hours 3 tubes tested. All infected.
In 72 hours 4 tubes tested. All infected.

Series D.

"Ash." Ten tubes put in saliva.
In 24 hours 2 tubes tested. Both infected.
In 48 hours 2 tubes tested. Both infected.
In 72 hours 6 tubes tested. All infected.
"Weston." Ten tubes put in saliva.
In 24 hours 2 tubes tested. Both infected.
In 48 hours 2 tubes tested. Both infected.
In 72 hours 6 tubes tested. All infected.

PLAIN COTTON.

Series A.

Four tubes put in saliva.
In 24 hours 4 tubes tested. All infected.

Series B.

Three tubes put in saliva.
In 24 hours 3 tubes tested. All infected.

SANDARAC AND COTTON.

Series A.

Four tubes put in saliva.

In 24 hours 3 tubes tested. All infected.
In 48 hours 1 tube tested. Infected.

Series B.

Four tubes put in saliva.
In 24 hours 3 tubes tested. All infected.
In 48 hours 1 tube tested. Infected.

BENZO BALSAM, VARNISH AND COTTON.

Series A.

Four tubes put in saliva.
In 24 hours 2 tubes tested. Both infected.
In 48 hours 2 tubes tested. Both infected.

OXYCHLORID ("AMES").

Series A.

Four tubes put in saliva.
In 24 hours 3 tubes broken, other not infected.

Series B.

Four tubes put in saliva.
In 24 hours 1 tube tested. No infection.
In 48 hours 1 tube tested. No infection.
(Other two broken.)

Series C.

Five tubes put in saliva.
In 24 hours 1 tube tested. No infection.
In 48 hours 1 tube tested. No infection.
In 7 days 1 tube tested. No infection.
(Lost track of 2 tubes.)

Series D.

Five tubes put in saliva.
In 24 hours 2 tubes tested. No infection.
In 48 hours 1 tube tested. No infection.
In 72 hours 1 tube tested. No infection.
(One tube broken.)

In a series not here reported there was no infection up to sixteen days.

STERILE VASELINE, COTTON AND THEN CEMENT ("ASH").

Series A.

Ten tubes put in saliva.
In 24 hours 3 tubes tested. Not infected.
In 48 hours 2 tubes tested. Both infected.
In 72 hours 5 tubes tested. All infected.

Series B.

Five tubes put in saliva.
In 24 hours 1 tube tested. Infected.
In 48 hours 4 tubes tested. All infected.

Series C.

Five tubes put in saliva.
In 24 hours 3 tubes tested. No infection.
In 48 hours 2 tubes tested. Both infected.

Series D.

Five tubes put in saliva.

In 24 hours 1 tube tested. No infection.
In 48 hours 1 tube tested. Infected.
In 72 hours 3 tubes tested. All infected.

The experiments here reported do not represent all that has been done by any means. In some cases only a few experiments are reported as having been made as in plain cotton, but a great number have been made. Many tests of filling materials and root-canal fillings have also been made, but no tests as to the relative permeating power of different bacteria have yet been undertaken.

Before closing I wish to thank Dr. Garnet Trewin, demonstrator in the Royal College of Dental Surgeons, for very valuable assistance in carrying out these experiments.—*Transactions of Dental Society, State of New York.*

TUMORS OF THE SUPERIOR MAXILLA.

Heft's study of tumors of the upper jaw, came to the conclusion that extensive operations for the removal of such tumors did not offer a favorable prognosis. Thirty cases of carcinoma of the upper jaw, eight died within a short time after the operation, thirteen had a recurrence in from three to six months and died on an average of eleven months after the operation. The same author observed that seventeen cases operated upon for sarcoma, one died of apoplexy six months later, two had recurrence within six weeks and died at the end of six months, six were free from recurrence ranging from nine months to ten years, two others had recurrence but are still living. In this analysis made by Stein of fifty-three cases, thirty-four were carcinoma, fourteen were sarcoma, six were epulus, four were osteomus, one cystis, one fibroma and one ecchondroma. Carcinoma occurs more frequently after fifteen years of age; sarcoma between the age of twenty and forty years; osteomo usually appears at a more early age; epulus was found to be more frequent in woman than in man. Where carcinoma is found in the superior maxilli it usually originates in the mucous membrane of the antrum of Highmor; thus it is understood the reason for the advanced condition of the disease process before the characteristic symptom has been detected, thus delaying the operation until an advanced stage of the disease has been reached, so that surgical means as a rule, has very little beneficial effects upon the patient. The early detection of this pathological process and its radical removal is of great importance. (Taken from Archiv fur Klin Chirurgie.)

Callari and Philippson observed that in eight out of six thousand children in southern Italy, from four to sixteen months of age, had fibroma developed about the frenum of the tongue. Its usual characteristic growth is that of a slightly elevated whitish tumor, increasing in size up to a certain point where it does not undergo any special change for some time, then there may appear in the center of the tumor a coagulation necrosis. It is very easily and quickly removed, but if any portion of the tumor remains it will develop in a very short time. This pathological process usually develops from four to fifteen months after birth. (Taken from Centralblatt of Die Med. Wochensch.)

Tremoliaris found that nineteen out of twenty-five cases of alopecia were materially benefited by putting the teeth and mouth in a perfectly healthy condition. The author is inclined to believe that the eruption of the third molar tooth has a great deal to do with the tropho enurotic condition, so frequently found in those cases where there is a great loss of the hair, or even in those cases where there is but little falling out of the hair.

Carcinoma of the Lip.

In the analysis of 170 cases of carcinoma of the lip, treated and operated upon by Janaowsky, 71 cases were operated upon and 170 were treated without any operation. In those cases in which operations were performed, where it was not necessary to make an extensive operation other than the removal of the diseased lip, the majority healed in from 9 to 15 days. He found that metastasis usually formed in the submental region very early in the disease. In those cases he removed the lymphatic glands in both the submental and submaxillary regions, and in a number of instances found it necessary to make a radical operation by resecting the lower maxilla.

Forty seven per cent of the cases operated upon were cured by the first operation. In those cases in which the disease returned the second time it was usually in the original place or in the submental region, and was from 6 to 12 months after the first operation.

The writer also noted that the malignancy of this pathological process influenced the final results a great deal more than the length of time that the tumor had been developing previous to operation. Those growths that are classed as benign or slow carcinomatious processes can be successfully operated upon after a number of years.

The operation was more successful in patients from 60 to 70 years of age; however, the operation was a success in older persons. This disease process was found to be 19 times more frequent in the lower than the upper lip of man, while in woman it is more frequently found in the upper lip.

The author also observed that this pathological process is ten times more frequent in man than in woman. He further observed that habits and occupation of the patients apparently had no influence on bringing about a predisposition to the disease. The writer also observed that about twenty-five per cent of these cases took on

a malignant form from the start, and that the glands, submental and submaxillary, became involved in from two to three months after the primary lesion appeared on the lip. About fifteen per cent were of the slow benign form, while sixty-five per cent pursued rather an intermediate course. (Taken from Archiv fur Klin Chirurgie.)

WHY WE ARE LOSING OUR TEETH.

By Sir James Crichton-Browne.

There is ample evidence that modern civilization and habits of life tend toward alimentary inefficiency and therefore to diminished resistance to the pathogenic bacteria that are harbored in food. It is only when these disease germs slip through an unwary or temporarily incapacitated stomach that they can set up dangerous diseases, and so my belief is that disease-causing bacteria owe their opportunity to debility more or less general of the alimentary canal.

Need I mention the teeth? The care of them is the beginning of worldly wisdom, for good digestion waits not only on appetite, but on mastication. Well, the teeth of the present generation are a wretched failure, notwithstanding all the care bestowed on them. The inspector of recruiting tells that among the class of men from whom recruits are drawn deterioration of the teeth is rapidly increasing, and the prevalence of dental caries among school children is alarming. Dentists multiply and flourish, tooth powders and pastes and fluids dispute the hoardings with quack medicines, and to meet a man or woman of middle age at the present day without an artificial denture or a filled tooth would be a pleasant surprise.

TEETH ALL SOUND IN XIVTH CENTURY SKELETONS.

But during some excavations in my town in Scotland, Dumfries, during 1901, on the site of the old Grey Friars' Monastery there, eleven skeletons of adult men—one of them supposed to be the skeleton of Red Comyn—were dug up, and in the skulls of all these skeletons of the fourteenth century all the teeth were absolutely perfect. There was not a missing tooth, nor one with a speck of unsoundness, in any one of them.

The causes of dental failure again are numerous, and of them I will name one only, and that because it is itself an element in the general alimentary enfeeblement of which I am speaking—I mean poverty of salivary secretion. The salivary glands are now often damaged in early life by tubercular invasion, but, apart from that, there is, I conceive, a general reduction in their size and activity in civilized races. Savage races have large jawbones and powerful muscles attached to them, which have to be liberally used in chewing their crude and undressed food, and as the movements

of the jaw muscles stimulate the secretion of saliva, they have a copious supply of that fluid.

SALIVA THE BEST TEETH LUBRICANT.. .. ..

But the progress of culinary art has steadily made food softer and more pulpy, and so the jaw muscles have not been called on to exert themselves as vigorously as formerly, and have so failed to urge the salivary glands to functional artivity. But saliva is the best lubricant for the teeth; hence perhaps in some degree the fine preservation of the teeth in savages, and it is also mechanically protective to the stomach by aiding in the breaking up of the food and wrapping it in mucous, while it chemically assists digestion by reducing by its ptyalin the starchy constituents of the food to soluble forms. Any diminution in the quantity of the saliva or deterioration of its quality must be injurious to the teeth and to later digestive operations.

If we descend to the stomach and try to gauge its energy in these days we shall find indications that it is not what it was in former times. The late Dr. Beard maintained that in the United States of America digestion is being progressively enfeebled, and he adduced, as proof of this, the history of pork as an article of diet. At one time, he said, it was a favorite viand in the Eastern States, but owing to progressive digestive debility it has gradually retreated toward the West and is now only to be found on the tables of the sturdy farmers of the extreme Western States.

Among ourselves I am inclined to think stomachic capacity is not what it once was. There is still no doubt a great deal of overeating among the upper classes, but we seldom hear of the lusty appetites of the days of yore. Let me recall an illustration of a lusty appetite from the memoirs of Sir Walter Scott.

He and his friend Mr. Shortreed, on one of those Lidleysdale raids, when he was so brisk-hearted and jovial, rode over one morning from Vleuchhead to breakfast with Thomas Elliott, of Tuzzliehope. Before starting at 6 o'clock, just to lay their stomachs, they had a couple of ducks and some London porter, and were, nevertheless, well disposed on their arrival at Tuzzliehope for a substantial breakfast, with copious libations of whisky punch, which did not in any degree incapacitate them, for they were able to pursue their journey, picking up fragments of border minstrelsy as they went along.

And it was not only on country excursions that meat and drink were consumed ad libitum. The ordinary diet of the men of the period was what we shall call redundant and their feasts were Gargantuan. A dinner given by James Ballantyne on the birth-eve of a Waverley novel is thus described: "The feast was gorgeous, an aldermanic display of turtle and venison with the suitable accompaniments of iced punch, potent ale and generous Maderia. When the cloth had been drawn and many toasts had been honored and songs sung, the claret and olives made way for broiled bones and a mighty bowl of punch, and when a few glasses of the hot beverage had restored their powers, the guests were ready to listen to the new romance, read aloud by Ballantyne ore rotundo."

It makes puny trenchermen of to-day, trifling with our ortolans and dry champagne, shrink into our shoes to read of these achievements; and I fancy that had Mr. Barrie been called on to take part in such initiatory rites in connection with the publication of his earlier works, we should never have rejoiced in the "Little Minister" or "Sentimental Tommy."

But it is not only a falling off in the capacity for gorging that marks digestive failure among us. I learn on excellent authority that there is a steadily increasing demand for all kinds of peptonized foods—that is to say, of foods that are partially digested before they are taken, and spare a weak stomach exertion. Dyspepsia is omnipresent, and diseases of the stomach are apparently more frequent than they were and are often attributable to nervous failure. Of 100 cases of dilatation of the stomach lately analyzed by Dr. Saunby, of Birmingham, 42 were due to dyspepsia and 29 to neurasthenia or nervous exhaustion.

The prevalence of an atonic and languid condition of the bowels is attested by the enormous consumption of aperient material waters and drugs like Cascara, and here again certain diseases present themselves with increasing frequency. Appendicitis, which not so long ago would have been a cryptic utterance, has become "familiar in our mouths as household words," and I am inclined to agree with Mr. Barling that the increase of this formidable malady among us—a real increase obviously, and not due to more accurate diagnosis—must be largely ascribed to indigestion as the result of imperfect mastication and of the hurry and drive of modern life, with consequent nervous incompetency.

PROPHYLACTIC ITEMS.

By R. B. Tuller, D.D.S.

(*These items began in the July number.*)

Do you know:

That H^2O^2 (Peroxide of Hydrogen) is one of the best things in the list for cleaning teeth?

Used in place of H^2O (water) to mix your powdered pumice into a paste?

Do you know that Pyrozone, Dioxogen, Hydrogen Dioxide and Peroxide of Hydrogen are very much the same thing?

Any one will do.

Such a mixture has a great antipathy for ordinary surface stains on teeth.

It will quickly rout them where used with the usual friction.

But remember one thing:

Any of the above preparations will eat holes in your napkins and towels and will eat and stain, or rather take color out of dress goods.

So it must be remembered and guarded against.

If by chance any gets on clothing, wet the spot immediately with dilute aqua ammonia or bicarbonate of soda water.

And before throwing towels and napkins aside for the wash, dip them into like solutions or sprinkle them well with it, else there will be a hole for every spot when they come back from the laundry.

But H^2O^2 makes the teeth "look like new," and we must have it.

It not only attacks stains that are otherwise hard to remove, but searches out every bit of decomposed food, etc., for which it has a great affinity.

It dislodges it, embraces it and carries it off.

On account of the acidity it is well to rinse the mouth thoroughly after its use.

In some cases it is well to follow with milk of magnesia or some anti-acid.

The acidity of these preparations is due, I understand, to the introduction of a little sulphuric acid to make them more stable.

Reduced four or five times its volume with water H^2O^2 makes a fine mouth wash.

Not *ad libitum,* but under the advice of the dentist.

After removal of tartar wash pockets well by injecting a forcible stream of H^2O^2 into them.

Dr. J. H. Woolley of Chicago has invented a syringe for this purpose.

It throws 6 or 8 very fine but forcible streams into the pockets.

It is called the Fountain Tooth Spray. It is a good thing.

In removing soft accumulations of food, etc., from between the teeth where the brush will not work, small rubber bands will be found usefull.

Stretch and slip between the teeth, then allow to resume natural fullness, and draw back and forth, sweeping the entire approximal surfaces of both teeth.

Patients can do this for themselves, using the rubber instead of floss silk.

To give especial attention to interproximal surfaces with the pumice paste referred to, little flat wedged-shaped tooth-picks will be found very convenient.

The attention given to this part of cleaning teeth, between and close up to the gums and under the free edge, is a prophylactic measure of importance to prevent initial deposits that lead on to pyorrhoea alveolaris.

Dentists who are making something of a specialty of prophylaxis are making a point of seeing their patients at least once in two months or oftener, as he may determine best, and go carefully over every surface of each tooth, though the eye may detect but little that would seem to call for such attention.

It is pretty evident that pyorrhoea will fail to get much of a foothold in such a mouth.

It would seem, too, that cavities in their incipiency would receive a decided check.

But not unless the patient will do his or her part will the dentist succeed in prophylaxis.

Now, cavities cut curious capers, don't you know?

Haven't you found them right on the tip of a cusp?

If there is any place on the surface of a tooth that should be immune, and generally is so, on account of being kept free from lodgment of germs by constant use, it is prominent cusps.

And yet we sometimes find cavities seated there, almost convinc-

ing us that they begin somewhere in the tooth structure—internally.

But, no doubt there was some fault in the construction of the enamel rods at that point when tooth was forming, but not visible to either patient or dentist until it had become carious.

Prophylaxis takes us back to certain measure to be followed in the way of proper food supply for, not only to the babes, but to their mothers prior to the advent of the babe into the world.

The mother's diet often needs regulating from the standpoint of the dentist as well as from that of the physician.

However, the physician in his advice would no doubt have in mind the osseous tissues as well as others.

Still the dentist is not infrequently consulted.

Of course the first teeth begin to form in foetal life, the tips of cusps being first as regards the calcic part of tooth.

The food regime of the mother would have its effect upon the child. If rich in lime salts to the extent needed, we would expect better teeth than if there was poverty of those elements.

It is contended, however, that the nutrition of the child will be taken care of anyway at the expense of the mother if her nutrition is not sufficient for both.

Thus, it is contended that the wasting of teeth of the mother during the period of pregnancy, which is often noted, is due to the draft on the mother's osseous tissues (especially the teeth) to contribute to the child.

If the grain foods furnish what is needed in the way of lime salts, or better than other things, this day and age of the world ought to not only send into the world children with good teeth (no, no, not when they are born, but in due time), but give them plenty in their diet to insure their getting what is needed while growing up.

This is the day and age of baby foods and breakfast foods, all supposed to be rich in just what the human system needs.

One thing is certain: right living in every way; living as our Maker intended, would rid the race eventually of about all the ills flesh is heir to—not overlooking the teeth.

XIV INTERNATIONAL MEDICAL CONGRESS, MADRID, SPAIN, APRIL 22-30, 1903.

SECTION OF ODONTOLOGY AND STOMATOLOGY.

PRELIMINARY PROGRAM.

April 22, at 10 A. M.—The opening sitting of the International Dental Federation, under the presidency of His Excellency, The Minister of Public Instruction. At 8 P. M., banquet of the International Dental Federation.

April 23, at 10 A. M.—Meeting of the Section of the International Dental Federation. At 12 M., meeting of the whole Federation. At 3 P. M., opening meeting of the XIV International Medical Congress, under the presidency of His Majesty, King Alfonso XIII. At 9 P. M., soiree, given to the members and their ladies by M. Aguilar, secretary of the Odontological Section.

April 24, at 10 A. M.—Meeting of the Section, reading and discussion of papers. At 2 P. M., meeting of the Section, presentation and discussion of papers.

April 25, at 10 A. M.—Clinics and practical demonstrations before the Section of Odontology. At 2 P. M., meeting of the Section and discussion of papers. At 8 P. M., banquet for the Section (by subscription).

April 26, at 1 P. M.—Breakfast in the garden of the BUEN RETIRO, offered by the local committee to the members of the International Dental Federation and members of the American Dental Society of Europe. At 4 P. M., bull fight, offered to members of the Congress by Provincial Members. At 8 P. M., banquet by the American Dental Society of Europe.

April 27, at 10 A. M.—Clinics and practical demonstrations. At 3 P. M., meeting of Section, reading and discussion of papers.

April 28—Excursion to Toledo and fete, offered by the Spanish Dentists to foreign visitors; departing from Madrid for Toledo by special train at 9 A. M. Visit to city, breakfast at Castillian Hotel, return to Madrid at 8 P. M.

April 29, at 10 A. M.—Meeting of Section, reading and discussion of papers. At 2 P. M., meeting of Section, reading and discussion of papers.

April 30—Closing of Congress.

During the week of the Congress there will be offered a reception at the Palace Royal by His Majesty, the King, and a fete, given by the Municipality. The dates are not yet fixed for these receptions. The opening sitting of the Congress will probably take place in the Theatre Royal. The sittings of the Sections will be in the Palace of the National Library and Royal Museums. Clinics and practical demonstrations will take place for Section Twelve in the School of the Faculty of Medicine.

Officers of Section Twelve are as follows:

President.....M. Alejandro San Martin.
Vice-Presidents.....MM. Luis Guedea, Bernardo Sanchez.
Secretary.....M. Florestan Aguilar.

Papers will be read by the following:

1. "Treatment and Filling of Pulpless Teeth," by A. W. Harlan (Chicago), and J. D. Losada.

2. "Dental Microscopy," by MM. Leon Williams (Londres), J. Choquet (Paris).

3. "Buccal-facial Prosthesis in the Skeleton," by MM. Claude Martin (Lyon), V. Guerini (Naples), Delair (Paris).

4. "The Knowledge One Should Have to Practice and Teach Odontology," by MM. Goden (Paris), Florestan Aguilar.

5. "The Nature and Treatment of Pyorrhea Alveolaris," by MM. Hopewell Smith (Londres), Younger (Paris), Damians (Barcelona).

6. "Local Anaesthesia in Dental Surgery," by MM. O. Amoedo (Paris), Pier Michele Giuria (Genes).

There will be other papers presented to this Section, but it is too early to give their titles. (The Dental Section will give numerous clinics and demonstrations).

EDITORIAL

THE ODONTOGRAPHIC CLINIC.

Some three thousand dentists of this country will remember the 16th and 17th of February, 1903, in Chicago as one of the most notable events in the history of dentistry, so far as conventions are concerned. Usually such affairs are held in the "Good old Summer time." In this case the selection of time might have been better chosen if the fifteenth anniversary of the birth of the Odontographic Society had fallen in a more propitious season. It fell, however, in February, and, nothing daunted, though blizzards and snow blockades sometimes upset all calculations, the society started in a year ago to arrange for a clinic that would be worthy the occasion.

The Odontographic Society was organized as a strictly young men's society, but its growth was so vigorous and its usefulness so apparent and widespread, that its doors were eventually opened to all dentists of good ethical standing, though its affairs have been mostly in the hands of the younger men, and now its numerical strength is nearly five hundred. With well-chosen committees, the work has been going on with systematic effort and precision for days and weeks and months, until, through the enthusiasm of the workers, the whole country, as regards dental affairs, was also enthused and the finish was all that it was hoped it might be, one of the grandest meetings of dentists and the largest ever held.

Though Sunday, the 15th, opened with the beginning of one of the worst blizzards of the winter, which lasted to the end of the meeting, the attendance seemed in no may abated. Snow fell all day Sunday and with a rapidly falling temperature and increasing winds, Sunday night was a howler. But did anyone who had in-

tended coming stay at home? Not that we know of. By Sunday noon the capacity of the Sherman House, where the headquarters were established, was engaged to the last cot, and other hotels pretty well crowded. While nearly all trains were late most of our visitors had started in ample time, and the convention opened on time, with an auditorium packed to its fullest capacity. From that time on everything moved with little variation from original plans, and the meeting was a grand success. A notable thing was the large number of visitors from a distance. They came from New England and from the Rockies and the Pacific coast, from the Dakotas in the north and from Florida in the south, all point intervening. Canada sent a very liberal quota, and other foreign countries were also represented, one from as far distant as Cape Town, South Africa. as welcome to us as Uncle Sam's subjects.

The labor of the chairmen of the several committees and their co-workers deserve the praise and appreciation for their strenuous efforts which has been generously accorded. It is needless to name them here; they are known and widely known, and will not soon be forgotten. But it was the coming of our visitors that made the success. The Odontographic prepared the feast, and sent out the invitations, and nearly or quite three thousand responded, annihilating distance and snapping their fingers at the rigorous old bluff that Winter felt called upon to put up just at that time. And they are glad they came. We think they are. They had a grand meeting and a good time. Many lingered lovingly with us for several days after the clinic was over. That is a pleasing feature to us. It was evidence that they hated to break away from the good fellows they found here, if their reception was a little chilly—on the outside.

While it was found necessary to carry some of the papers and clinics over into the third day—the 18th—the affair culminated in a grand and glorious banquet on Tuesday evening at the Auditorium. Yes, it was a glorious affair, for aside from the festooned radiance of Old Glory on all sides, in the way of decorations, the patriotic enthusiasm that broke out when the music burst into the the entire evening, made glorious the only word that can express it. In honor of our Canadian guests the British colors were hung in the center, back of the stars and stripes. Did a more enthusiastic gathering ever sit in banquet hall?

The remark was made by some of our guests that in no place but Chicago could such a meeting and such a banquet be held; not but what there are plenty of willing hearts elsewhere, and filled with the same sort of enthusiasm and desire to do; but few places that are centrally located (one favorable feature for Chicago), have the generous hotel and banquet-hall facilities to care for and entertain such a large crowd, to say nothing of the extensive and most complete facilities for papers, clinics and other work of the meeting proper. Perhaps it is no doubt true that in no other city, anywhere, would all facilities afforded here be so well combined. That is our good fortune. It is also our good fortune that, like ancient Rome, all roads lead to Chicago.

Come again. R. B. T.

REVIEWS

S. Stewart Sherlow (Journal of Laryngology) reports a case of empyema of the antrum, in an infant aged nine months. The child was presented with left cheek badly swollen, the inflammation had existed but a few days; pus was discharging through the nostril, and on examination of the mouth revealed a fistulous opening along the alveolar border of the upper jaw, in about the same position where the first molar tooth should erupt. A probe was passed through the opening until it struck something movable. The child was put under an anesthetic. The fistulous was enlarged until the floor of the antrum was reached. The movable body was found to be that of a perfect crown of a molar tooth. By proper antiseptic irrigation the child made a good recovery.

Clauda (Journal of Laryngology) reported a case of perforating ulceration of the soft palate that proved to be tuberculosis. The case was treated with lactic acid, varying in strength from one in ten to one in three. The local ulceration healed, but the patient ultimately died with tuberculosis of the lungs.

Dr. Hamilton Burt (British Medical Journal) reported a case of epithelioma of the tongue, due most likely to chafing against some badly broken down molar teeth. Under treatment of iodides it almost entirely disappeared, but returned again. The patient was 24 years of age.

Unique Accident.—A woman went to sleep with her artificial teeth in her mouth. She awoke and with a sneeze the uvula was caught under the plate and could not be removed nutil the plate was taken out.

W. R. H. Stewart reported a case of what he called strumous ulcers of the mouth and tongue. The patient was 30 years of age, and had suffered from ulcers on the tongue, lips and cheeks for

about four years, passing away at intervals and then returning every three weeks to a month. She had been treated two years. When put on anto-specific treatment the ulcers grew worse. For the last twelve months she had been taking from one to two grains of sulphide of calcium, and Angier's petroleum emulsions, and had gradually grown better.

W. G. Spencer objected to them being called strumous ulcers, for that meant that they were to be considered as tubercular ulcers. He was inclined to think that they were herpetic ulcers, and he considered that any astringent when applied strong enough would eventually heal them. Butlin's treatment was a 10 per cent bichromate of potassium. When this agent was applied it caused a stinging pain, and the ulcers gradually grew worse. Butlin's opinion considered the cause of the disease, while it was not known, was due to some more active agent than the nerve lesion nor the neuralgic pain. However, Potter was of the opinion that it was a case of herpes, as he had but a short time before shown a case before this society which was herpes, and he considered the two cases near enough alike to be classed as each having been produced from the same cause. His case he treated with a 20 per cent solution of chromic acid, but the case received no beneficial effects. These cases were considered identical to those mentioned by Osler as stomatitis neurotica chorinca, also as having been mentioned by Jacobi.

Paul S. Soudern described in the New York Medical Journal a method of preventing the clouding of laryngoscopes and mouth-mirrors. His method was described by applying with the fingers, slightly moist, a film of soap of any brand or kind to the mirror, and then rub it off with a clean, dry cloth. The mirror will then be bright and clear, and will not become clouded when the breath is brought in contact with it. (Try it.)

"Suprareralin" is the latest by-product of the packing-house industry. It has been found that the suprarenal gland of an animal possesses wonderful astringent properties, so powerful that operations on the eye and nose may be performed without the loss of any blood. With the addition of cocaine, such operations are also painless. "Suprarenalin" is one of the most precious articles in existence, being worth $7,000 a pound.—*Surgical Clinic.*

Dr. H. A. Cayley got into an argument with the editor of the Butte Inter-Mountain, and one of the arguments demolished the doctor's solar plexus and lumbar spiral nerves, paralyzing his lower half. The X-ray was applied to locate the bullet, which it failed to do, but accidentally cured the paralysis. Taking this in connection with the finding of a set of false teeth in a man's gullet, when the teeth were under his pillow several miles away, the glorious certainty of the X-ray seems only equalled by that of modern surgery. And next day he died.—*Surgical Clinic.*

Porcelain Inlays in Deep Cavities.—In those extensive cavities where decay has so encroached upon the pulp that its death would almost surely follow if the tooth were filled with a metallic filling, although the cavity be lined with the best non-conductor you know of, porcelain will give one almost absolute security; the pulp will remain alive and the tooth comfortable. Clinical experience has taught us that porcelain is the best non-conductor of thermal changes, and practically restores the tooth to as nearly normal a condition as though decay had never occurred.—*Dr. W. T. Reeves, Summary.*

A Proposed Dental School in Mexico.—A representative of the Mexican Government, Dr. Jose J. Rojo, of the City of Mexico, was another of our distinguished foreign visitors during November. Mexico now has no dental schools giving a complete course. There are one or two universities which have upon their teaching faculties men who lecture upon Oral Pathology and Surgery, etc.; but there is no complete dental school. Dr. Rojo was deputed to visit a few of the best American dental colleges for the purpose of obtaining the information necessary to the proper founding of at least one such school in the City of Mexico.

Dr. Purnell, a well-known American dentist, practicing in Guadalajara, Mexico, has written to the Dean for information that will assist in the organization of a dental school in that city.

They all appear to come to Buffalo for a model, and all seem to agree that they find a good one here.—*Forum.*

Quick Method of Repairing Broken Porcelain Teeth.—In building onto a crown, in the case of a crown that is broken, or a con-

tinuous gum case which is broken, if you have the pieces, there there is no trouble in the world to mend them; but if you have lost the pieces, it is troublesome. For instance, if you have a continuous gum case and you break a tooth off of it or break it in any way, if you have the pieces, you have nothing to do in the world but stick the pieces back with silex; put it in your furnace and it can be mended in a few minutes.—*Dr. D. J. McClellan, Extract Western Dental Journal.*

Low Fusing Porcelain.—One of the disadvantages of low-fusing porcelain is its tendency under fire to become spherical. For this reason, and apart from its lack of the necessary amount of resistance under stress, it does not appear suitable for extensive restoration or for general use in crown and bridge-work. The great increased amount of shrinkage which it exhibits, as compared with high-fusing porcelain, is not in itself of so much importance as its tendency to lose its form and destroy the artistic work which may have been expended upon it, and its further objectionable liability in some cases, to absorb secretion and change color.—*Dr. Robert Brewster, Register.*

High-Fusing Porcelain.—The word high-fusing simply implies that that particular porcelain fuses above the melting point of pure gold, about 1,800 degrees F. Any porcelain flowing below such a temperature has had incorporated in its component parts a great portion of spar or similar ingredients, resulting in a more or less glassy mass, a condition of affairs our most expert makers of porcelain have striven for years to avoid, ever since the earliest days, when a sort of Wedgewood ware was accepted as an apology for tooth restoration.

Porcelain operators strongly advocating the use of the low-fusing body for inlays base their plea principally upon the fact that they are enabled to utilize gold foil for a matrix, claiming that it may be adapted to the walls of the most difficult and inaccessible cavities, where platinum foil would be prohibited because of its harshness and liability to split beyond all usefulness under manipulation.—*Dr. J. S. Bridges, Register.*

To Produce Spring Temper in Swiss Broaches.—To draw Swiss broaches to a spring temper they should be placed on a steel, iron, or brass plate, one-eighth of an inch thick and about three inches square. This should be held by pliers or forceps over a spirit lamp or Bunsen burner and be kept continually over it, so as to keep the plate heated as uniformly as possible. The broaches should be washed very carefully and when they become a pigeon-blue color they should be dropped into cold water.—*Internat. Dental Journal.*

A Roughened Base on Porcelain Inlays.—Place an extremely thin layer of very course high fusing body over the floor and nearly to the margins of the matrix. This spread must be of much higher fusing porcelain than contained in the body of the inlay. Bake to a slight bisque. If the other porcelains are handled correctly the result will be a nicely-granulated surface on the base, which is especially applicable to small and shallow cervical restorations, where the staying qualities are difficult to obtain.—*Dr. J. S. Bridges in Review.*

Hemorrhage Following Pulp-Extirpation.—If the pulp be removed bodily and severed at the apex of the root, there will not be much hemorrhage; but if torn into shreds and removed piecemeal, there is usually quite profuse hemorrhage; and this I consider the objectionable feature of the surgical destruction of the pulp. In such cases I do not advocate the immediate filling of the canals, because of the time required to completely control the hemorrhage, and the liability of leaving portions of the pulp in the canal.—*U. D. Bilmeyer, in Dental Headlight.*

About two years ago the American Society of Orthodontists was founded, with the object of advancement of orthodontia, and the establishment of this science as a distinct specialty in dentistry. Its membershop is rapidly increasing, indicating the greater interset in and desire for knowledge of orthodontia than heretofore.—*Forum.*

Opening Roots.—I would never open a root for a patient suffering from constipation without first removing the ailment, as it

may be termed, and administering in one-grain doses, three times a day for three or four days, sulphite of calcium to eliminate the stomatitis consequent on this condition, and which may lead to veritable poison.—*Dr. Genese in Stomatologist.*

A Polisher for Rubber Work.—Procure a piece of fair leather, heavy and stiff, cut disks one inch in diameter and trim to a knife-edge, cut a hole in the center for lathe chuck. This is very efficient for polishing between teeth and places hard of access.—*J. A. Rockcy, D. D. S., in Brief.*

Fits the Crime.—A polished European novelist once referred to "the glint of American gold" in the teeth of American women visiting the old country. Wm. Leon Ellerbeck, of Salt Lake City, says: "A glamor of auriferous plugs." Either statement fits the crime.—*Western Journal.*

Cavity Varnish.—Dissolve some copal in equal parts of alcohol and chloroform; add one equal volume of hydro-napthol, and the product will be a very adhesive and strongly antiseptic varnish, free from all caustic properties.—*Stomatologist.*

The pound roll of Seabury & Johnson's surgeons' lint may be cut into napkins of any desired size for dental use by the aid of the carving knife used as a saw. This will save a vast amount of tedious work.—Dr. A. E. *Munmock in Dental Hints.*

Oxygen has been injected into the veins for asphyzia with benefit and none of the bad effects following air injection.—*Alk. Clinic.*

Carbolic acid one dram, water one pint, is the best mouth-wash in mercurial stomatitis and poison oak eruption.—*Alk. Clinic.*

The "tooth-brush plant" grows in Jamaica. By cutting a piece of the stem and fraying the ends, the natives made a tooth-brush, and a dentifrice to use with it is produced by drying and pulverizing the dead stems.—*Health.*

BIBLIOGRAPHICAL.

Dental Materia Medica, Therapeutics and Prescription Writing. By Eli H. Long, M. D., Professor of Materia Medica and Therapeutics, Medical and Dental Department, University of Buffalo. In one octavo volume of 321 pages; 24 illustrations, including 18 color plates. Published by Lee Bros. & Co., New York. Price $3.00.

The first issue of any work naturally contains typographical and grammatical errors. We have not found Dr. Long's book devoid of the traditional pitfalls. The obliteration of such are accomplished by the careful scrutiny of the author in the succeeding editions.

There is no doubt but what Professor Long's work has received careful consideration from a medical man's standpoint. But we find his conclusions too general in several instances and not minute enough for the practitioner of dentistry. Dr. Long's method of compilation and the handling of the subject from his viewpoint is excellent. But the work needs the collaberation of some equally clever dental writer to make it a dental materia medica exclusively. Many of the newer dental remedies are omitted because of the author's apparent infamiliarity regarding their use in dentistry. There is no publication that contains better illustrations for depicting the physiological action of drugs upon the various organs of the human body than Professor Long's. The index to drugs is of sterling worth and Professor Long should be complimented upon its conciseness and the nature of compilation. The book comes to us neatly bound and of excellent size.

OBITUARY.

JOSEPH P. MARTIN.—Born in Brockville, Canada, August 31, 1847. Died January 15, 1903, of inflammation of the heart, after a sickness of two days. Came to Chicago and associated himself with Dr. H. R. Phillips in 1875, at 169 South Clark St. In 1885 he bought out the business and afterwards moved to 113 Adams St., where he had a large business at the time of his death.

NOTICES OF MEETINGS

National Dental Association, Ashville, N. C., July 28.

National Association of Dental Examiners, Ashville, N. C., July 24, 25 and 27.

State Dental Meetings.

California State Dental Society, San Francisco, June.
Colorado State Dental Association, Denver, June 16, 17 and 18.
Connecticut State Dental Association, Hartford, April 21 and 22.
Georgia State Dental Society, Tallalah Falls, June 9.
Florida State Dental Society, Seabreeze Beach, May 27.
Idaho State Dental Society, Boise City, June 9.
Indiana State Dental Association, Indianapolis, June 30, July 1.
Maine Dental Society, July 21, 22 and 23.
Maryland State Dental Association, Baltimore, March 28.
Massachusetts State Dental Society, Boston, June 3 and 4.
Minnesota State Dental Association, Minneapolis, Sept. 1.
Mississippi Dental Association, Vicksburg, May 19.
Missouri State Dental Association, Kansas City, May.
Nebraska State Dental Society, Lincoln, May 18.
New Jersey State Dental Society, Asbury Park, July 15, 16, 17.

McLEAN COUNTY DENTAL SOCIETY.

The McLean County Dental Society held its regular meeting in Bloomington, March 6. The paper was by Dr. A. H. Rathbun, of Farmer City, on "Mal-Afflusion." The discussion was opened by Dr. M. S. Weeks, of Leroy.

READING DENTAL SOCIETY.

The Reading (Pa.) Dental Society held its fifth annual banquet Feb. 5. Many out-of-town guests were present.

NOTICES OF MEETINGS

Xi PSI PHI FRATERNITY.

The Xi Psi Phi Fraternity, numbering 1,800 graduates and students of dental schools, met at the Auditorium, Chicago, Feb. 17, and the following officers of the supreme chapter were elected:

President: Dr. G. Brown, Glens Falls, N. Y.

Vice Presidents: Dr. W. J. Montgomery and Dr. M. C. Schuler, Chicago.

Secretary and Treasurer: Dr. C. C. Markey, Chicago.

The next meeting will be held in St. Louis.

DENTIST FELLOWSHIP CLUB OF STREATOR, ILL.

The Dentist Fellowship Club, of Streator, Ill., met Feb. 20, to listen to a paper by Dr. Mason, in which the writer took the position that the dentist should always meet his engagements and insist on his patrons meeting theirs or paying dentist for loss of time.

Drs. Davison and Hepler were appointed to prepare a program for the second annual banquet, to be held March 19, and Drs. Taylor and Mason to manage for the banquet.

SPRINGFIELD DENTAL ASSOCIATION.

The Springfield Dental Association met Feb. 9. The paper of the evening, entiled "Ideal Filling," was read by Dr. Converse.

NEW HAVEN DENTAL SOCIETY.

The New Haven (Conn.) Dental Society held its monthly meeting Feb. 10, at 139 Orange street. The clinicians were Dr. A. W. Capon, of Philadelphia; Dr. J. P. Carmichael, of Milwaukee. Dr. G. A. Maxwell, of Holyoke, Mass. gave an interesting address on "Some Phases of Neuralgia of Dental Origin."

EASTERN INDIANA DENTAL ASSOCIATION.

The annual meeting of the Eastern Indiana Dental Association will be held in Elwood in May. Preparations for the meeting have been begun.

LYNN (MASS.) DENTAL SOCIETY.

The Lynn (Mass.) Dental Society held a meeting Feb. 10. A very interesting evening was spent.

ONTARIO DENTAL SOCIETY.

The largest meeting in the history of the Ontario Dental Society was held Feb. 10, and the following officers were elected for the ensuing year:

Honorable President: Dr. S. Moyer, of Galt.
President: Dr. R. E. Sparks, of Kingston.
First Vice President: Dr. Thornton, Chatham.
Secretary: Dr. G. G. Hume.
Treasurer: Dr. H. E. Eaton.
Supervisor of Clinics: Dr. W. G. Spalding.
Archivist: Dr. W. E. Willmott.

A telegram received Feb. 17th, from President Roosevelt, announced that Dr. A. W. Harlan and Dr. T. W. Brophy, of Chicago, will represent the United States at the fourteenth annual international medical conference to be held at Madrid next April.

New York State Dental Society, Albany, May 13 and 14.
Ohio State Dental Society, Columbus, Dec. 1, 2 and 3.
Tennessee Dental Association, Chattanooga.
Texas State Dental Association, Houston, May, 1903.
Vermont State Dental Society, Burlington, March 18, 19 and 20.
Pennsylvania State Dental Society, Harveys Lake, July 7, 8, 9.
Central Michigan Dental Association, Grand Ledge, May 13, 14.

The Columbus (Ohio) Dental Association, at a meeting held in the office of Dr. Clare Frame, Feb. 3, heard an interesting technical paper by Dr. Frame. The attendance was large, and much interest was shown.

7TH DISTRICT DENTAL SOCIETY OF NEW YORK.

The 35th annual meeting of the 7th District Dental Society of the State of New York will be held at the Osburn House, Rochester, N. Y., on April 14, 15, 1903.

ITEMS

Dr. Colter, of Oklahoma City, lost $1,000 by fire, on Feb. 4.

Dr. J. J. Russell, of Darby, Pa., is now located at Bradford, Pa.

Dr. H. L. Buell, of Menominee, Mich., is again at his office after a short illness.

Dr. F. M. Lynde, of Barre, Vermont, lost $300 by fire during the month of February.

The office of Dr. W. H. Fancher, Racine, Wis., was robbed of $50 worth of gold, Feb. 22.

Dr. Ross Gibson of Washington, Pa., will move to East End, Pittsburg, the first of April.

Dr. W. D. Armstrong, formerly of Kirkwood, Ill., has opened a dental office in Astoria, Ill.

The dental office of Dr. Frank Anderson of Vincennes, Ind., was burglarized at noon, March 6.

Orlo G. Pepper, a dental student at the University of Michigan, shot and killed himself, Feb. 18.

Dr. Bull, of Winfield, Kas., suffered from a stroke of paralysis the latter part of February.

Dr. R. L. Willett, of Pekin, Ill., and Miss Chicken, of Evanston, are to be married in the near future.

Dr. Noah Tiller, of Pensacola, Fla., was accidentally shot and killed while hunting the latter part of February.

The closing session of the Ontario Dental Society, at Toronto, was held on Feb. 11. The day was devoted to clinics.

During the night of Feb. 26 thieves entered the offices of Drs. Dalby and Wilcox, of Elgin, Ill., and secured about $60 worth of booty.

Dr. Earle McCarthy, for the past two years a dentist in Racine, Wis., has gone to Lexington, Ky., where he will engage in practice.

The dental office of Dr. C. A. Young, of Calumet, Ill., was entered and robbed of $175 worth of material, during the night of March 8.

Dr. N. McK. Wilson, who has been located in Shepherdstown for the last seven or eight years, has recently moved to Davis, W. Va.

John Simonson created a reign of terror in Duluth, Minn., March 1, in a most peculiar manner. Armed with a pair of forceps, he walked up to an

Dr. W. A. Low, of Baltimore, Md., has been confined to his home by injuries sustained in a trolley car collision, during the first week of February.

Sixty of the graduates of the dental department of the University of Michigan are engaged in the practice of their profession in foreign countries.

A banquet was tendered to Dr. T. W. Brophy by Dr. H. L. Banyhaf, of Milwaukee, at Kinsley's, March 5, the eve of Dr. Brophy's departure for Europe.

George Funsch, a 12-year-old boy of Bellsville, Ill., was arrested Feb. 11, for stealing $65 worth of gold from Drs. Brightfield, Mace and Woells, local dentists.

Streator Professional Fellowship Club will hold its annual banquet March 19, at Streator, Ill. Dr. Barrett of Ottawa, and Dr. Warner of Pontiac, will read papers.

Otis Avery, of Hinesdale, Pa., age 95, is the oldest practicing dentist in the world. He maintains the office which he opened 70 years ago, and has a large practice.

Dr. M. R. Griswold, once a dentist with a large practice in Hartford, Conn., died, March 1, in the state prison at Wethersfield, where he was serving a sentence for arson.

Dr. W. G. Woodworth, for many years a prominent dentist in Detroit, Mich., is seriously ill with pneumonia. The complications which have set in make his recovery very doubtful.

Dr. Avery is also the only living man who rode on the first trip of the "Stourbridge Lion," the first steam locomotive to turn a wheel in America, which had its trial trip Aug. 8, 1829.

A Waukegan baby was born with two teeth. This appears to refute the claim that as the breakfast food habit increased, rendering teeth useless, we should gradually develope into a toothless race.

Dr. S. Straith, for nearly two years engaged in dentistry in Bay City, Mich., left for Detroit, Feb. 7, where he has opened an office and will make a specialty of extracting with nitrous oxide gas.

John Williams, of the New York Dental Parlors in Atlantic City, N. J., was arrested Feb. 18, upon complaint that he was practicing in the state without a license and that he is not a graduate of a dental college.

Governor Montague of Virginia, Feb. 20, named the following members of the State Board of Dental examineers to serve for three years from Jan. 1: Dr. H. Wood Campbell, Suffolk, and Dr. R. E. Simpson, Fincastle.

The second lecture in the course by the women physicians of Rochester, N. Y., was given by Estelle Gamble-Holdren, D.D.S., on Jan. 31. "The Care of the Teeth" was the subject of the lecture, which was very interesting.

Some time after having a filling done by Dr. Hammersmith she suffered pain; on investigation found that part of the jaw was decayed and that the cause of it was a piece of a drill that had been broken off in the bottom of the filled tooth.

Clarence Wilkerson was arrested in Nashville, Tenn., Feb. 13, charged with having stolen six pairs of forceps from Dr. L. G. Noel, five pairs from Dr. Jones, four pairs from Dr. J. B. Singleton and a medical work from Dr. Jefferson.

The police have issued an order, expelling from Dresden, O'Brien, the American dentist, who taught the Crown Princess Louise to ride a bicycle. O'Brien's wife recently sent the King some letters which the Crown Princess had written to her husband.

Nineteen are in England, 15 in Germany, 5 in Scotland, 3 in Switzerland, 3 in South Africa, 2 in Ireland, 2 in France, and 2 in New Zealand, and 1 in each of the following countries: Austria, Brazil, Chili, China, Costa Rica, Egypt, Italy, Java, and New South Wales.

March 1 a well dressed stranger visited the office of Dr. A. A. Young, of South Chicago, saying that his teeth hurt. His manner was suspicious and that night he returned and stole $150 worth of gold leaf. The following day, a suspect, Charles Alberts, was arrested by the South Chicago police.

William Sackett, formerly of Leechfield, Pa., died Feb. 16 in the Western penitentiary. He was sentenced in Armstrong county in June, 1901, to a term of four years for larceny. Sackett was a dentist and was at one time a respectable citizen of his town. He was married and had seven children.

A bill was recently introduced into the Massachusetts legislature "to provide for the better care, preservation, and development of the dentures of minor inmates of the public institutions of the commonwealth." The bill has the support of the associated charities organization and of the State Dentists' Association.

He is also a defendant in a suit of damages in the District Court. The suit was brought there by John Lowe, a colored man, who alleges that Williams extracted several of his teeth unnecessarily, putting in gold crowns, and, that later, on pretext of examining the teeth he tore out the crowns because, Lowe said, he owed one dollar on the bill.

An action which has an interesting and usual basis, was placed on trial yesterday afternoon before Justice Childs of Buffalo, in part 1 of the Supreme Court. Mrs. Laura Kirkover is the plaintiff, and the defendant is Dr. Percy

C. Hammersmith, dentist. She demands that he pay her $5,000 damages for an alleged poor job he did in filling her teeth.

Dr. John O. Merrill, a prominent young dentist of Nashville, Tenn., and Miss Mary Courtney, of Crawfordsville, Ind., were married at the home of W. W. Courtney, of Nashville, Feb. 6. The announcement of the wedding was a very great surprise to the friends of the popular young couple, as the secret was well guarded until the hour arrived for the event.

Frank Chapman, a member of the Charlotte life-saving crew, is having X-ray pictures of himself made for the purpose of locating a dentistal burr, which he swallowed. A day after swallowing the burr, which slipped from the dentist's hand while he was working on Chapman's mouth, Chapman had an operation performed on his aesophagus, but the burr was not found.

Samuel J. Kennedy, who is under indictment for the murder of Dolly Reynolds in the Grand Hotel, New York, in July, 1898, and who is at liberty on $10,000 bail, is to be released today without bail, the prosecution abandoning the case. He is practising dentistry on Staten Island. Kennedy was convicted and sentenced to death. On two subsequent trials the juries disagreed.

He acquired his early knowledge of dentistry by self-study, but took a post-graduate course after returning from the war, at the University of Pennsylvania. He also served in the state legislature. The position of honorary president of the Susquehanna Dental Society he has held for several years, and he has been a contributor of valuable papers at the annual convention.

Chief Donahue, of Omaha, Neb., has received a letter from Superintendent of Police Cox, of Hammond, Ind., to warn the dentists of Omaha to be on the lookout for a clever thief whom he thinks is traveling that way. This crook, who is described as five feet four inches in height, dark, and weighing about 135 pounds, calls during the morning, makes an engagement for himself or family, and then, when the dentist leaves at noon, enters and takes all the gold in stock.

During the fourth week of the session of the Indiana legislature, a bill was introduced by the dentists, the main object of which was to compel college graduates to take an examination before being licensed. The bill was crushed by the persistent refusal of its backers to permit an amendment, providing that after practicing for five years under a licensed instructor, a dentist should be entitled to take the specified examination before the board for a license.

DISGUSTED WITH SCIENCE.

"Doesn't it beat all, the rapid strides science is making? Think of the scores of new planets and comets which have been discovered during the past few years, and the records that have been unearthed to complete the history of the world. It's marvelous, it's——"

"Oh, bosh!" exclaimed the man with the toothache. "Why don't they do

something worth while? The stuff the dentist gave me to put in this cavity doesn't do a bit more good than it used to when I was a boy."
old man in a saloon, asked him how his teeth were, and was told that they were all right. He then knocked the man down and pulled two teeth before he was stopped. He also visited the home of a Mrs. Eliasman and pulled one of her teeth before he was driven oft. It was learned after his arrest that he had operated on eight or ten men during the day. He claimed after his arrest that he was a dentist, but when asked for his license pulled out a contract for cutting cordwood. The man seems to be perfectly sane. If he has any other mental weakness than indulgence in aggressive dentistry, it has not yet been discovered.

Among the bills recently introduced into the senate, was the following: Clark.—To establish a state board of dental examiners and repealing the present law on the subject. The bill provides that no dentist shall practice in this state without having been first granted a license upon examination by the state board of dental examiners. It provides that each candidate shall pay $20 when application is made for examination, and $5 extra for a license. Every dentist must keep his license in a conspicuous place in his office and shall have it registered in the county in which he practices. The bill also gives the state board control over dental colleges.

DEATHS.

Dr. E. M. Stealy, a dentist of San Francisco, Cal., committed suicide, Feb. 27, by swallowing thirty grains of strychnine.

Dr. Green, of Whitewater, the oldest living licensed dentist in Wiscousin, died with the grippe during the latter part of February.

Dr. John P. Nesbitt, for 15 years a dentist in Nebraska City, Neb., died Feb. 11.

Dr. S. Grant Groves, the sixth victim of the Clifton Hotel fire, at Cedar Rapids, Ia., died in great agony at St. Luke's Hospital, Feb. 22.

Dr. E. S. Powers, of Brockton, Mass., died Jan 31, after a brief illness. He was a past commander of Bay State Commandery, K. T., member of post 13, G. A. R, and of the Commercial Club

Dr. Wm. J. Smyth, a dentist in the employ of the Parker Dental Company, of New York, died Jan. 29, from an overdose of cocaine which was taken during a fit of despondency, caused by the fact that he was becoming blind.

Dr. Davis, a very prominent dentist and an old resident of Galesburg, Ill., died Feb. 10, at the home of his daughter, Mrs. Will Read, in Emporia, Kas.

Dr. Woodworth, of Detroit, Mich., died Feb. 19, after having been ill a week with pneumonia.

Dr. J. L. Hill, of Gettysburg, Pa., died March 4.

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